

Stormwater Report NORTHWEST REGION Checklist and Template

(September – Update) 2003

This checklist is an informational guide for preparing and reviewing WSDOT Northwest Region Stormwater Reports. It contains items considered important for inclusion within hydraulic and water quality documentation commonly warranting attention when preparing and completing full designs and contract Plans Specifications and Estimates (P.S. & E.). For a complete listing of report requirements, consult the current hydraulic design references contained within WSDOT's Design Manual, Hydraulics Manual, Highway Runoff Manual, Environmental Procedures Manual, and Plan Preparation Manual. This checklist may be updated with changes posted on the exchange folder at:

*All Public Folders/WSDOT/NW Region/NW Environmental/NW Water
Quality/Reports/Stormwater Report *.doc*

Additional documentation may be required based upon project specific BMPs and features selected for inclusion in the proposed work.

If the designer is uncertain how to proceed or wishes to request assistance in organizing a Stormwater Report, or has questions regarding content to include, contact the regional hydraulics or water quality personnel listed below for guidance.

Northwest Region Hydraulic and Water Quality Contacts March 1, 2003

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<http://wwwi.wsdot.wa.gov/regions/northwest/RP&S/Environmental/HWQ/default.htm>
<http://www.wsdot.wa.gov/regions/Northwest/rp&s/environmental/Hydraulic/default.htm>

General Remarks about the Template

The checklist and template provided here is only intended as guidance. Green type in the accompanying template provides recommendations of where to find information to be included or gives direction of how the information is to be used. Links provided in the template to web sites are intended as a convenience to the designer and are not to be understood as endorsement of the material present at that site. The designer's and project engineer's best judgment should be utilized in selection of sources for all materials used as reference. The Designer shall delete these parts and the checklist sections from the template prior to submittal. The Designer shall include only those portions of the text that are applicable. In many places multiple examples of possible text are provided. Modify wording as needed. The Project Engineer shall review the final text to ensure the report has been properly prepared under their direction and the report represents an accurate proposal for the work to be accomplished by the subject project.

Stormwater Report Format

Stormwater reports at a minimum shall be stamped and signed by a licensed professional engineer. Appendices with supplemental information and additional figures/tables should be included as necessary to document the design.

Supplemental Submittals

At times designs may require revisions due to various elements within a proposed project. In the event the items contained in a Stormwater Report change a Supplement shall be prepared documenting the changes to be made with backup documentation. Include revised plans, calculations, and other updates as warranted in a submittal package to the Regional Hydraulic and Water Quality Office. Allow at least one month for review. An approval/concurrence letter will be issued for the supplement.

Type <A>

STORMWATER REPORT

SR < ____ >

< Project Name, Stage >

< SR ____ to SR ____ >

MP < ____ > to MP < ____ >

<**XL**>/<**OL**> – xxxx, PIN xxxxx

WASHINGTON STATE DEPARTMENT OF TRANSPORTATION

Northwest Region
Seattle, Washington

<Name>, P.E.
Project Engineer

Lorena Eng, P.E.
Region Administrator

< Month > < 20 ____ >

General

- ___ *Copies: For initial review of report, 2 copy is sufficient; for final report submittal, provide 3 copies for a type A and 2 copies for a type B report. Provide additional copies to Construction and Maintenance to be distributed by the Design Office. Incorporate communications with construction and maintenance into narrative in appropriate sections prior to submittal to Hydraulic and Water Quality Office.*
- ___ *Reports shall be submitted on 8 ½ x 11-inch paper. Foldout sheets may be used for plan sheets and other tables neatly folded to 8 ½ x 11 inches with a 4-¼ inch fold back on the right side. Margins shall be provided on all sheets for comb binding or placement within standard three ring notebooks or other equivalent format.*
- ___ *Correct spelling and acceptable grammar verified.*
- ___ *Math has been checked, including spreadsheets.*
- ___ *Calculations match plan sheets and profiles.*
- ___ *Final report is bound with title, SR, MP, and project #, on the cover. If space permits, SR, MP and title should appear on spin of binding.*
- ___ *Use consistent units of measure throughout report.*

Title Page

- ___ *Report is correctly classified as type A or B (per 1997 Hydraulic Manual Section 1-3)*
- ___ *State Route (SR) is indicated*
- ___ *Name of Project provided and stage indicated when applicable*
- ___ *Begin/End MP(s) are provided*
- ___ *OL or XL – Number given with PIN(s)*
- ___ *Final report is stamped and signed by a licensed engineer*
- ___ *Report is dated with the month and year*

Plan Sheets and Figures

The vicinity maps, plan sheets, and/or other figures should include right-of-way limits, existing roadways, proposed roadways, significant structures, drainage basins, elevation contours, location of nearby or adjacent construction activities, affected utilities, and sensitive areas (wetlands, streams, receiving water bodies, etc), where appropriate.

Multiple plan sets may be applicable. (i.e. contours on sheets may clutter other information warranting two or more plan sets.)

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Approval & Concurrence Letter(s) (to be included upon receipt)

Approval Letter(s) will be provided and inserted into the file copy of the “Stormwater Report” by the Northwest Region Hydraulic and Water Quality Office.

It is the intent that concurrence and approval of a “Stormwater Report” by the Northwest Region Hydraulic and Water Quality Office’s Manager will meet the requirements for a “Hydraulic Report” and “Stormwater Site Plan” or “Temporary Erosion Control Plan” as called for in the various WSDOT publications. It is anticipated that with this one report, multiple documentation may be eliminated.

For Type “A” reports a transmittal letter from the Region Hydraulic Section to WSDOT Headquarters Hydraulic Office and Headquarters’ reply will be provided along with the Regional concurrence letter. For Type “B” reports only a regional letter will be provided.

The Regional Hydraulics and Water Quality Office will provide copies of the concurrence letter(s), to the Regional Plan Review Office and the Design Office, when review and concurrence are completed.

Regional approval of hydraulic report portions and concurrence with SSP/TESC portions will be issued jointly by Hydraulic and Water Quality personnel, through the Northwest Region Hydraulic and Water Quality Manager.

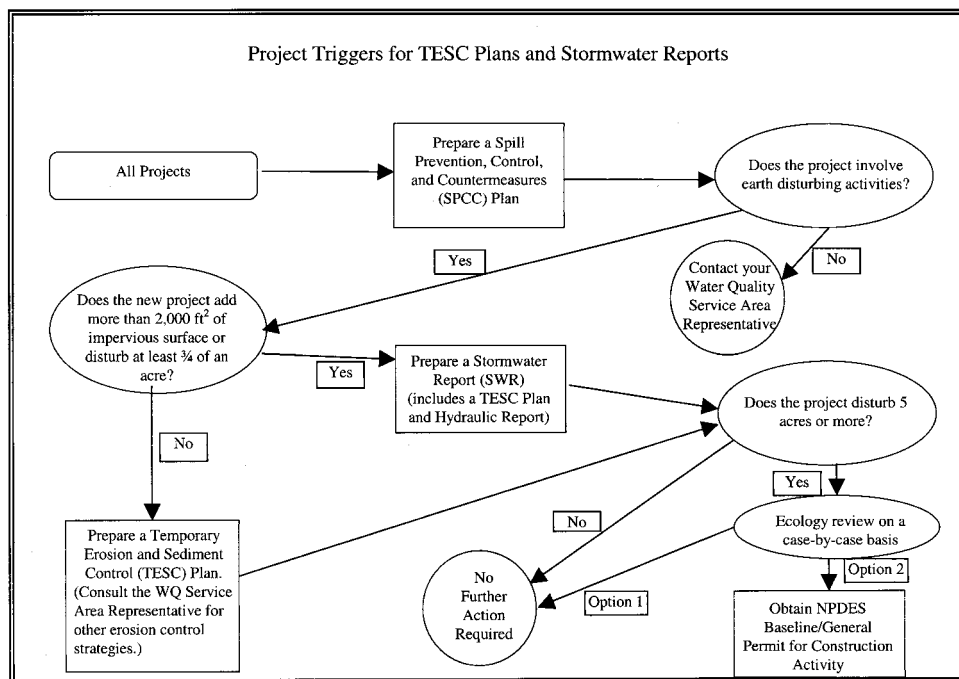


Table of Contents

TABLE OF CONTENTS

Provide a Table of Contents. The Stormwater Report containing hydraulic and water quality components shall be presented in an easy to read format, organized by subject matter in narrative and appendices. Plan sheets, details and profiles shall be provided to supplement the description and calculations. Number pages. Appendix pages may use an independent numbering system.

A recommended format for a Northwest Region Stormwater Report is suggested in the accompanying template.

Table of Contents

- ___ *Report is presented in easy to read format, organized by subject matter (narrative and appendices)*
- ___ *Table of Contents included.*
- ___ *Page numbered sequentially or by appendix or section designation with pager number*
- ___ *All pages, figures, tables are labeled for easy reference.*

1.0 Project Overview

This project proposes to _____
_____. *Provide a short description of the work to be accomplished on this project. Use the Project Definition for the project as guidance to determine what is to be included in this section. Ensure this information is later included in your Statement of Work in the P.S. & E. Special **DESWORK.GRI**.*

This Stormwater Report documents the following permanent and temporary hydraulic/hydrologic improvements; and temporary and permanent erosion control measures, and the other related modifications to be constructed as a result of improvements to the highway <and local road> system:

_____. *Briefly list the improvements: new enclosed drainage systems, number of ponds, vaults, channel changes, culverts, swales, wattles/socks, silt fence, drain filters, compost berms, vegetative filter strips, etc. with a description of their purpose and location.*

Enhanced treatment is defined in IL 4020.02, Appendix A, page 1.

The average daily traffic (ADT) for this section of highway is _____ per *_(name of source)* _____, which is <above> <below> the _____ ADT, *(Name of Reference Manual)* where enhanced treatment is required. <Therefore enhanced treatment will be provided on this project. > <Enhanced Treatment will not be provided on this project as documented in section _____. > *Contact Hydraulic and Water Quality staff for need of enhanced treatment.*

An ADT of 50,000 is the value given in IL 4020.02 (See: Appendix A page 2 (first bullet)) above which enhanced treatment will be required.

ADT values for State highways may be found at:

http://www.wsdot.wa.gov/mapsdata/tdo/PDF_and_ZIP_Files/Annual%20Traffic%20Report%202002.pdf

Funding on this project is _____ <I-4>, *If any agreements are proposed relevant to design, construction, or maintenance, with local jurisdictions or agencies discuss here.*

1.1.0 SITE LOCATION

SR ____, MP ____ to MP ____ (*State Route and Project Limits*) is classified as a Type ____ - ____ Highway () (*enter words for Classification as well as abbreviation found on the Route Log page*) traversing generally <level>, <rolling> <mountainous> terrain in <rural> <urban> _____ County < and the City (ies) of _____ >. *See the State Highway Log for this information.*

Link to 2003 State Highway Log:

http://www.wsdot.wa.gov/mapsdata/tdo/PDF_and_ZIP_Files/statelog2003.pdf

The improvements for this project will occur within Section(s) _____, of Township(s) _____, Range(s) _____, <East> <West>, of the Willamette Meridian, in _____ County Washington (see Figure 1 - Vicinity Map). (*Add descriptions of any other streets/highways that may be involved.*)

1.1.1 VICINITY MAP

Provide a vicinity map showing project limits and label it "Figure 1". Vicinity maps should show the closest landmarks and project limits. Label cross streets and provide additional information consistent with Examples 4-2 through 4-6 of the Plans Preparation Manual. (Federal Aid Numbers need not be provided for a Stormwater Report – Vicinity Map.)

Figure 1: Vicinity Map

1.2.0 DESCRIPTION OF CONSTRUCTION ACTIVITIES

This project involves the construction of < _____ > from < _____ > to < _____ > and < _____ >

(Describe the overall project activities and where they will occur). The work activities will include < _____ > (e.g., clearing and grubbing, grading, roadway excavation and embankment, constructing storm sewers, paving with asphalt concrete, constructing temporary BMPs, constructing permanent stormwater detention and infiltration ponds, widening one bridge, adding two turn lanes, constructing curb and gutter, landscape planters, sidewalks, construction of a bus pullout, fencing, pavement markings, illumination, signalization, traffic control, etc.) Call out the construction plan sheets and details (i.e., See Appendix < ____ > for construction plan sheets and details.)

1.3.0 AREA IMPACTED

(The information below can be in text or table format. Additional text should be added for special or unusual cases.)

Example text is as follows:

PROJECT SUMMARY

Total area of the site [R/W to R/W line, Const. Limit to Const. Limit]

	< ____ > ft ² or <acres>
Total area of site expected to undergo excavation	< ____ >
Total area of impervious surface under existing conditions	< ____ >
Total area of pervious surface under existing conditions	< ____ >
Total area of impervious surface under post construction conditions	< ____ >
Total area of pervious surface under post construction conditions	< ____ >
Percent of new impervious surface treated for water quality	< ____ > %
Percent of new impervious surface treated for water quantity	< ____ > %

Total estimated area of clearing <and grubbing> _____ <ft.²> <acres>. Areas of clearing <and grubbing> are shown on the _____ plan sheets in Appendix ____.

<See Section <A.2.10> for a detailed tabulation of areas by BMP tributary area.>

(This percent can be greater than 100 % because it may include the percent of new impervious area treated plus the percent of the existing to be treated based on the new impervious area.)

For example: Percent of new impervious treated equals new impervious plus existing to be treated, divided by new impervious.

2.0 Permits and Associated Reports

2.1.1 ENVIRONMENTAL DETERMINATION AND CONDITIONS

The Northwest Region Biology Group should provide an effect determination for each project. This determination will also be provided to the Regional Plans Review Office.

This project has received an effect determination of <No Effect>, <May Affect, Not Likely to Adversely Affect>, <May Affect, Likely to Adversely Affect>. This determination was issued on <month> <day>, 20xx from the Northwest Region Environmental and Special Services Office, <USFW> <NOAA Fisheries>.

2.1.2 FISH AND OTHER ENDANGERED HABITAT

Include a statement if fish surveys were conducted.

<No identified streams exist within project limits.>

The <WSDOT, Northwest Region> <WSDOT, Headquarters _____ Office> <Washington State Department of Fish and Wildlife (WDFW)> conducted electro-shocking along the <names/WRIA numbers of stream reach(es)> on <month, <day>, 20xx and <no fish were observed. > < the following fish species and numbers were observed:>

Provide a summary of the fish survey results. Identify if the fish species are anadromous or not.

Historically _____ have been observed in the <name/WRIA number of stream> between < _____ and _____ > as documented <in> _____ <reference title> _____ < _____ by _____ > _____ <author> _____, < _____ date _____>.

No fish surveys are warranted for the proposed work within project limits. *[Provide only if a stream statement above was not included.]*

The following threatened and endangered species have been identified by

_____:

and _____

within the vicinity of this project.

Endangered and threatened species lists are obtained through the Northwest Region Permit Coordinator. Indicate if any species or their habitat has been observed within project limits (such as an eagle's nest site).

National Oceanographic and Atmospheric Administration (NOAA) Fisheries has identified evolutionary significant unit(s) (ESU) within the project limits, for <Chinook salmon, steelhead and bull trout> which (is/are) listed as (a) threatened species. Candidate species for reaches within the project limits include: < Coho salmon >.

<http://www.governor.wa.gov/gsro/regions/listings.htm>

http://www.wsdot.wa.gov/environment/eao/biology/bio_salmonids.htm

The United States Fish and Wildlife Service (USFWS) have identified distinct population segments (DPS) for < bull trout > within the project limits.

<http://pacific.fws.gov/news/grizzly/esafacts.htm>

http://www.nmfs.noaa.gov/prot_res/species/ESA_species.html

<http://www.mrsc.org/Subjects/Environment/esa/esa-intr.aspx>

2.1.3 FISH BLOCKAGE

<As stated above no identified streams exist within project limits.>

Fish passage blockages have been identified at river-mile ____ for name < Creek/River >. Which is <above> < below> the project crossing. The blockage is <a waterfall, suspended culvert, log jam, etc.>.

Some fish blockages are shown in the WIRA books.

<Since this is a natural blockage no removal is warranted. >

<Since this blockage is outside project limits and removal will not significantly benefit reaches above the project no removal is proposed. >

<Removal of this blockage would significantly improve and restore a large segment of reach to habitat. Therefore this project proposes to remove the blockage and provide a (bridge, bottomless culvert, ____ inch culvert, etc.).>

<Upstream condition above the crossing consists of (describe habitat condition as part of the assessment or justification for/or against removal of a blockage.) _____>

Give the length of reach that may be restored, and the condition of the reach (i.e. degraded or pristine condition) for the sections that may be made available by any improvement.)>

No fish blockage(s) exist within project limits and no modification(s) are (is) warranted in the stream crossing(s).

Weirs will be installed to backwater the culvert(s) and stabilize the stream channel(s) at _____. See Appendix ____ for the backwater calculations, and Appendix ____ for <weir details>, <channel profiles>.

2.2.1 PERMITS

Insert below the actual permits required for the project. Provide a text description of why some permits may or may not be required as necessary (e.g., a NPDES permit is not required because _____, or a shoreline management permit is required because _____, below the table.)

Permits and issuing agencies required for this project are:

<u>Permit</u>	<u>Agency</u>
Section 404 Clean Water Act	U.S. Army Corps of Engineers
NPDES Permit (Phase I)	NW Regional Department of Ecology
NPDES Permit (Phase II)	NW Regional Department of Ecology
Clearing & Grading Permit	< _____ > County & City of < _____ >
Hydraulic Project Approval (HPA)	Washington State Department of Fisheries and Wildlife (WSDFW)
<i>Other Applicable Permits or Approvals</i>	<i>Local, County, State, Federal</i>

See Figure 240-1a WSDOT Design Manual for listing of potential permits.

Contact the Northwest Region Permit Coordinator. They will be able to provide typical conditions that resource agencies may impose as part of an issued permit.

Include in the listing below only those permits, or agencies for which requirements, are to be applied.

The following permit requirements or conservation measures <will be> <are anticipated to be> applicable

HPA: _____

NOAA Fisheries Review: _____

United States Fish & Wildlife (USFW) Review: _____

The Design Office is scheduled to request <has requested> permit applications through the Northwest Region Environmental Office on < month > < day >, 20xx.

2.2.2 APPROVALS

Discuss any approvals or variances required from local jurisdiction or resource agencies that may be required to complete the project.

No special approvals or variances from local jurisdictions are required to complete the project as proposed.

2.2.3 EASEMENTS

Discuss any drainage or slope easements that may be required for the project. Indicate if these will be required for construction and/or maintenance.

< This project will be constructed entirely within WSDOT right of way. >

< Drainage and slope easements are required at _____ to _____. >

< This project will be constructed within WSDOT right of way and construction easements obtained from _____ County and the City of _____ within the existing street right of way shown on _< title of right of way plan >, sheet(s) <____> of <____. >

2.3.0 ASSOCIATED REPORTS

Below is an example list of reports. Revise to match actual reports and studies related to the project.

Other reports and studies conducted and prepared in conjunction with this project includes:

<u>Reports</u>	<u>Author</u>	<u>Date</u>
Cultural Resource Survey	<WSDOT, NW Region, author's name >	xx/xx/20xx
Geotechnical Report	<WSDOT, NW Region, author's name >	xx/xx/20xx
Environmental Impact Statement (EIS)	<WSDOT, NW Region, author's name >	xx/xx/20xx

See Environmental Procedures Manual for types of reports prepared in conjunction with EIS's

Hazardous Site Inventory Review	< _ author's name _ >	xx/xx/20xx
Wetland Biology Report	<WSDOT, NW Region, author's name >	xx/xx/20xx
Biological Assessment	<WSDOT, NW Region, author's name >	xx/xx/20xx
Collection, Containment, and Disposal Plan (See Section B.7.0, below) (Add RESIDEU2.DT1 to the contract special provisions.)	To be prepared by Contractor	

Spill Prevention, Control, and Countermeasures Plan	To be prepared by Contractor
---	------------------------------

Dewatering Plan	To be prepared by Contractor
-----------------	------------------------------

(See Section B.3.12, below)

2.4.0 OTHER REPORTS AND STUDIES

Describe/reference/summarize other drainage related special studies needed for the project. These reports or studies could include a, stream survey, groundwater and well monitoring (i.e. piezometer installations), traffic study [traffic studies only when Rest Areas are proposed, or are to be modified], etc.. See the Environmental Procedures Manual for types of studies, which may be conducted.

Basin Plan requirements <Watershed Report> is <are> discussed in Section 4.1.1.

Soil tests to determine pH/resistivity for pipe treatments, infiltration rates for ponds, <well monitoring> and water table elevation test results are summarized in Section 5.3 below.

3.0 DESIGN STANDARDS

Provide a discussion of the standards for each component of the new drainage system including detention release rate performance standards; water quality treatment levels; applicable exemptions, design storms used for storm drains, culverts, ditches, inlet spacing, etc. below

It is WSDOT Northwest Region's policy to use design criteria contained within the Highway Runoff Manual and the Hydraulic Manual or the local jurisdiction, whichever is more stringent. Consult with the Hydraulic and Water Quality Office and Permit Coordinator prior to submittal of a Stormwater Report, and provide justification for criteria used.

Design standards for this project follow the WSDOT, <1995> Highway Runoff Manual, <D.O.E. Stormwater Management Manual for Western Washington, August 2001>,

Design criteria is based upon the minimum conditions provided for in <IL 4020.02, and other> WSDOT design guidance referenced in this report. Specifically the following design standards have been used in evaluating and preparing the proposed design for the various drainage components:

3.1.0 DESIGN FREQUENCY

Provide the appropriate design standards below. See Figure 1-4 and Figure 2-4.4B, from the WSDOT Hydraulic Manual. Provide applicable frequencies only.

____ Year Storm for Bridges
____ Year Storm for Culverts
____ Year Storm for Channel Changes
____ Year Storm for Storm Sewer Trunks
10 Year Storm for Storm Water Inlets and Gutters
50 Year Storm for Depressed Roadways
10 Year Storm for Storm Sewer Laterals
<name of location(s)> Rainfall Curve(s) Apply
100 Year Barbs
100 Year Weirs

<For Temporary conveyance a 2-year developed condition flow rate was used. (HRM min. requirement 1).>

3.1.1 FLOW CONTROL CRITERIA

Instructional Letter (IL) 4020.02

<http://www.wsdot.wa.gov/fasc/EngineeringPublications/Manuals/IL4020.pdf>

Project Delivery Memo #02-03-Interium Infiltration Design Guidance, Dec. 18, 2002

<http://wwwi.wsdot.wa.gov/regions/Northwest/RP&S/Environmental/HWQ/infiltrationmemo.pdf>

Stormwater detention facilities have been design to meet the criteria of:

WSDOT 1997 Hydraulic Manual and/or King County 1998 Design Manual and/or DOE 2001 Western Washington Stormwater Management Manual Level 2, King County Surface Water Design Manual, Sept. 1998. _____
City of _____, Ordinance Number _____.
_____ Basin <Action> Plan, approved _____, by _<City, County, Agency or other local jurisdiction> _____

The basin plan contains the following applicable criteria within project limits.

The design shall be submitted to reflect the best intent of the Basin Plan. (If the basin plan requirements are not used, please provide justification. See Section 2.9 of the HRM)

Identify any commitments made regarding criteria, with what agency or jurisdiction, when given, etc. If applicable attach a letter or the commitment. This does not include MOU's signed by the Department (reference these under the reference Section 3.2.0 below.)

3.1.2 BASIC WATER QUALITY CRITERIA

Basic water quality facilities have been designed to treat the 6 mo. 24 hr storm event, in accordance with: <IL 4020.02> <IL 4049.00>, and WSDOT, Highway Runoff Manual, (1995 <Draft -- Jan. 2001>), <King County 1998 Surface Water Design Manual> <DOE 2001 Western Washington Stormwater Management Manual>.

- _____ *For each basin outfall any applicable exemptions and reason for applying an exemption is stated.*
- _____ *Criteria for each basin outfall has been stated and followed in the design.*
- _____ *Each basin outfall has a BMP provided.*

3.1.3 ENHANCED WATER QUALITY TREATMENT CRITERIA

Enhanced water quality treatment involves a higher rate of dissolved metals removal than Basic Treatment facilities. Water quality facilities have been designed to treat the 6 mo. 24 hr storm event, in accordance with: IL 4020.02 and WSDOT, Highway Runoff Manual, (<Draft -- Jan. 2001>), <King County 1998 Surface Water Design Manual>, <DOE 2001 Western Washington Stormwater Management Manual>.

3.1.4 OTHER REQUIREMENTS

Fish Passage Requirements

Water Quality Retrofit

Water Quantity Retrofit

Outfall Retrofit

Culvert Replacement

Outlet Treatment: beveled end sections, quarry spalls, debris screens, extensions, safety bars.

3.1.5 LEVEL OF RETROFIT

This project will provide <minimum> <____ % of a full retrofit> for water quantity, and <minimum> <____ % of a full retrofit> for water quality. Practicability is discussed _____ in this report.

_____ *Discussion of feasibility for water quality and quantity treatments of existing pavement included. – Statement of Non-practicability included when applicable.*

3.2.0 DESIGN REFERENCES

WSDOT Design Manual, Section 1210
WSDOT Highway Hydraulic Manual (Jan. 1997)
WSDOT Highway Runoff Manual (Feb. 1995)
WSDOT IL 4020.02 (Feb. 2002)
WSDOT IL 4049.00 (Aug. 2002)
WSDOT Roadside Manual (M 25-30)
WSDOT Environmental Procedures Manual M31-11 (June 2001)
WSDOT Water Quality Assessment Guide M 22-15 [*Note this manual is not current*]
WSDOT Standard Plans and Specifications
WSDOT Project Delivery Memo #02-03 Infiltration Design Guidance, (Dec. 14, 2002)
WSDOT Maintenance Manual, March 2002

<http://www.wsdot.wa.gov/fasc/EngineeringPublications/library.htm>

Regional Road Maintenance Technical Working Group, Regional Road Maintenance
Endangered Species Act, Program Guidelines.

WSDOT Maintenance Manual for Water Quality and Habitat Protection (June 2000)
*[verify with Maintenance before listing – This manual is available at the first
link below. The second link indicates the manual is being updated.]*

<http://www.wsdot.wa.gov/TA/Operations/Environmental/4dManual.html>

<http://www.wsdot.wa.gov/biz/maintenance/htm/esa.htm>

<List Any Local Government Storm Drainage Control>

*(List all applicable references used in the preparation of this Hydraulic Report. Below
is an example list.)*

Washington State Department of Fish and Wildlife, Fish Passage Manual at Road Culverts
http://www.wa.gov/wdfw/hab/engineer/cm/culvert_manual_final.pdf

Washington State Department of Fish and Wildlife, Integrated Streambank Protection
Guidelines (June 2002)

<http://www.wa.gov/wdfw/hab/ahg/ispgdoc.htm>

Washington State Department of Ecology, *Nonpoint Source Pollution Assessment Project*,
October, 1989 Publication #88-17.

Washington State Department of Ecology, *1998 Statewide Water Quality Assessment, 305(B) Report*, June 1998,

<http://www.ecy.wa.gov/biblio/97013.html>

Washington State Department of Ecology, *Stormwater Management Manual for the Puget Sound Basin*, February, 1992 Publication 91-75. [*updated with Pub. 99-11 through 99-15*]

Washington State Department of Ecology, *Stormwater Management Manual for Western Washington*, August 2001, Publications 99-11 through 99-15

<http://www.ecy.wa.gov/programs/wq/stormwater/manual.html>

Washington State Department of Transportation, *Hydraulic Report SR -*
_____. Month, 19xx or 20xx.

Washington State Department of Transportation, *Environmental Assessment*
_____. Month, 19xx or 20xx?

Washington State Department of Transportation, *Biology/Wetland Report*
_____. Month, 19xx or 20xx.



National Resource Conservation Service, *Soils Survey of* _____ *County Area*
Washington, <month>, 19__.

Guidelines for Bank Stabilization Projects in the Riverine Environments of King County,
June 1993

<http://dnr.metrokc.gov/wlr/biostabl/>

Current Manual Listing for WSDOT is at:

<http://wwwi.wsdot.wa.gov/docs/OperatingRulesProcedures/IndexABC.pdf>

*Determine if an approved Basin or Action Plan exists for the area within project limits.
Consult with the local County, City or WSDOT's Hydraulic Library to locate these
plans.*

Pierce County

<http://www.co.pierce.wa.us/text/services/home/envIRON/water/swm/basinplans/basinplansindex.htm>

King County

<http://dnr.metrokc.gov/wlr/pubs/pubindex.htm#mpr>

<http://dnr.metrokc.gov/wlr/Mapindex.htm>

Snohomish County

<http://www.co.snohomish.wa.us/publicwk/swm/>

Skagit County

Whatcom County

<http://www.co.whatcom.wa.us/publicworks/water/watershed.jsp>

Island County

<http://www.islandcounty.net/publicworks/address2.htm>

<There are no <known/applicable> Basin or Action Plans covering the area within project limits.>

4.0 Site Conditions

4.1.0 EXISTING CONDITIONS

This section presents the existing conditions on and surrounding the project site. Included are descriptions of the topography, land use, soils, and basins within the project area, WRIA, existing drainage patterns, water quality, and existing sensitive areas.

Provide an introduction to this section by briefly describing the local topography and land use patterns on and surrounding the project site. Reference a topographic map if included.

Briefly describe the Existing BMPs within project limits. See Section A.2.10, if new BMPs are to be provided, or include the table from that section here, when not included later in this report.

4.1.1 SOILS

The major soil type identified along the project, as identified in the Soil Survey of <_____> County is <_____>. Other soil types identified within the project limits, and ranked by relative predominance are <_____>, and <_____>.

Soil Hydraulic Group's may be found on Figure 3-3.3 of the WSDOT Highway Runoff Manual. Include a soils map with the information contained in the checklist below. This may be handwritten in dark ink over a photocopy of a portion of a map obtained from a published source.

http://soils.usda.gov/soil_survey/pub_sur/wa.htm

<u>Soil</u>	<u>Hydraulic Type</u>
<i>Alderwood</i>	<i>C</i>
<i>Naches</i>	<i>B</i>
<i>Everett</i>	<i>A</i>

A soils map is included in this report as Figure <____>.

See: Figure 3-3.3 in the WSDOT Hydraulic Manual to determine Hydraulic Type:

<http://www.wsdot.wa.gov/fasc/EngineeringPublications/Manuals/Highway.pdf>

Soil Map Elements

- _____ *Township, Range designations, Section Lines and Section Numbers,*
- _____ *Beginning/Ending Locations with SR, STA & MP designations, and any station*
equations within project limits.
- _____ *Scale Bar and North Arrow*
- _____ *State Route (SR) Route marked in heavy line and labeled.*
- _____ *Any stream shown on the quadrangle map designated.*
- _____ *Soil boundaries and abbreviations shown.*
- _____ *Legend with names of soil types through which the SR/project limits pass.*
- _____ *Identification of Soil Survey title and date of publication (also include sheet or*
plate number when applicable.)

4.1.2 DRAINAGE BASINS

The overall existing drainage basin for this project is the <____> Basin. This project site drains into... (*i.e., name stream, river, Puget Sound, Strait of Georgia, Strait of Juan De Fuca*). Within the project limits there are <____> drainage sub basins. (*If applicable describe sub basins*).

Example Text -- combining a number of sections:

Four drainage basins exist within project limits draining into the streams where they cross the highway at the locations shown in Appendix I.

Slippery Creek (#0118) flows into White River at River Mile 45.6. Scatter Creek (#0073) flows into the White River at River Mile 32.7 and Greenwater Creek (#0122) flows into the White River at River Mile 45.8. White River is classified by the Washington State Department of Ecology as Class AA (extraordinary). All discharges will need to meet Class AA water quality standards with no mixing zone allowed.

Watercress Creek (#0121) flows into the Newaukum River at River Mile 9.65. Newaukum River (#0014) flows into the Green River (#0001), which is classified by the

Washington State Department of Ecology as a Class A (excellent). All discharges will need to meet Class A water quality standards with no mixing zone allowed

Both the White River and Green River drain into Puget Sound as WRIA #10 and #9 respectfully.

The project site lies within the <_name_>*, Water Resource Inventory Area (WRIA) <_number_>*.

See <http://www.ecy.wa.gov/services/gis/maps/wria/wria.htm> for the names and numbers of the WRIA within Washington State.

The Environmental and Special Services Office has copies of each WRIA book for the WSDOT's Northwest Region showing stream numbers and descriptions of the area.

4.1.3A EXISTING DRAINAGE BASINS

Provide maps or/and plan sheets showing drainage basins significant to the project. The maps should show the entire drainage basins, including portions that are off WSDOT right of way. If the project has several drainage basins that contribute to various hydraulic features, then each drainage basin should be clearly labeled and the same label should be referred to in the hydrologic and hydraulic calculations. Quadrangle maps (USGS 7.5 minutes, or 15 minutes when the 7.5 minute is unavailable) may be copied and highlighted for larger basins with tributary flow to the project site. The Northwest Region Hydraulic Library has a set of USGS maps that may be copied. Include scale bar, north arrow, and other pertinent information (see soil map checklist above—Section 4.1.2).

<Existing> Drainage basin maps are provided <in Appendix ____ > <as Figure ____ in this report>.

4.1.3B PROPOSED DRAINAGE AND CATCHMENT AREAS

When the changes between existing and proposed conditions are important for the calculations, the maps should show both conditions, on separate maps if necessary for clarity. Maps should always be of an adequate scale to allow reviewers to verify all areas and site conditions used in the calculations.

<Catchment area maps are provided in Appendix ____.>

<Catchment areas are delineated on the drainage plans in Appendix ____ <and Figure(s) ____ of this report.>

4.1.4

OUTFALLS

The WSDOT Outfall Inventory lists outfalls along state routes, which are ranked (High, Medium, or Low) by retrofit priority. At this time, High-ranking outfalls are strongly encouraged for retrofit and Medium-ranking outfalls should be considered.

(Include a table listing MP, condition, and ranking of each outfall within the project area. If outfall ranked medium or high, state if it will be retrofitted.)

(If you need assistance to determine the retrofit priority ranking of the outfalls within your project, please contact the Water Quality Staff or consult the posting labeled "Accessing the Outfall Inventory" in the Northwest Region Water Quality Public Folder in Exchange.)

The WSDOT Outfall Inventory dated <year>_____ indicates <number>_____ outfalls within this project area. Each outfall is shown and labeled on the _____ plan sheet(s) provided in Appendix _____ of this report.

<u>Designation (SR/MP/Offset)</u>	<u>Condition</u>	<u>Ranking*</u>
164-9.91-L-17	Circular Pipe/CMP 18"	Low
164-13.38-L-30	Open Channel Low erosion/normal vegetation	Low

* High, Medium, or Low

<All outfalls within project limits are classified as "Low"; therefore no retrofit investigation was performed.>

<The outfalls classified as medium and high have been investigated for retrofitting and the following actions will be taken: _____.>

There <are no> <is one> <are _____> pipe outfalls within the project limits.

<This> <These> outfall<s> <is within> <are within> <extend beyond> the State right-of-way. <It has> <They have> been visually inspected and are functionally stable <except for _____.>

The project office has reviewed as-built plans, old hydraulic reports, and field conditions. The following locations are outfalls for concentrated stormwater flows from <project limits> <the parcel>: The locations are shown as "A" through "____" on the _____ plan sheets in Appendix _____.

(Outfall location callouts may be added to the drainage plans in the appendix.)

Outfall	STA (SR-STA – Offset)	Type/Condition	An Outfall Listed As: *
A	SR 5 10+00 (50 RT)	Swale	5.158.12 R55
B	SR 5 15+20 (85 LT)	18" Pond Outlet	5 160.11 L90
C	SR 5 20+18 (45 RT)	8' x 10' Box Culv.	None

* Outfall designations from WSDOT Outfall Inventory < date__>.

<Natural discharge locations for stormwater runoff will be maintained.>

<Diversion of stormwater runoff is proposed at _____. *Also provide justification of why diversion was proposed. It is WSDOT's policy to maintain existing flow paths and not divert stormwater runoff from one sub-basin to another.*

Also, describe any suspected illicit connections or discharges within the project limits, or state:

Illicit connections have been noted at the following locations and the following action will be taken:

List station and offset, or provide a description of location, and discuss action to be taken, such as: Provided Maintenance Area _____ with notification with memorandum dated _____. or Contacted _____ and _____ will happen by _____.

<The Design office is not aware of any illicit connections or discharges to the state drainage system within the project limits.>

_____ *Stormwater discharges to wetlands have required treatment prior to release (threshold requirements identified in report.*

4.1.5 EXISTING WATER QUALITY OF RECEIVING BODIES

The applicable portion of WAC 173-201A is provided in Appendix _____. The Department of Ecology 303d Report lists the following water bodies within the project limits.

The Ecology listing can be accessed at the following Internet site:
http://www.ecy.wa.gov/programs/wq/303d/1998/1998_by_wrias.html

Example text follows:

Stream and River Classifications within the project limits are:

<i>Green River</i>	<i>Class A</i>	<i>(Good)</i>
<i>May Creek</i>	<i>Class AA</i>	<i>(Excellent)</i>

If County or City classifications are also available please provide. These may be found in Basin Plans, or local Ordinances.

Impaired water bodies listings from the Department of Ecology's 303d have been identified within the vicinity of the project as follows: <or shown in Appendix ____ >

See website:

http://www.ecy.wa.gov/programs/wq/303d/1998/wrias/1998_water_segs.pdf

Example Text is provided as an appendix below. Also the GIS workbench has data showing locations.

4.1.6 EXISTING SENSITIVE AREAS

(Summarize the wetland report, areas of critical habitat, sensitive areas specified in basin plans, etc. If applicable reference figures).

<There are <no> wetlands, critical habitat, sensitive areas or special basin plan or action plan issues specific to the area within project limits.>

Washington State D.O.E., Washington State Wetland Identification and Delineation Manual, March 1997, Pub.96-94

<http://www.ecy.wa.gov/pubs/9694.pdf>

_____ *Plan Sheets showing planned improvements with wetland(s) delineations and buffer limits.*

_____ *Identification of wetland classifications with jurisdiction or methodology used to classify wetland(s) provided.*

Example text for Natural Wetlands is as follows:

The wetlands in the project are discussed in the Bothell to Swamp Creek - SR 405 - Biology/ Wetland Report, prepared by WSDOT, dated September 1995. The wetland delineations are shown in this SSP on Figure 5 - Sensitive Areas. The drawings distinguish between surveyed wetland delineations and those that were transcribed from the WSDOT study because some wetland flagging could not be located. Wetland delineations have been field verified by the Corps of Engineers. One wetland, located just off of Locust Way at Filbert Road is currently being re-reviewed due to discrepancies between two independent wetland studies.

Another example is as follows:

Wetland delineations have been conducted in areas where construction activities will occur outside of the existing subgrade shoulder. A separate technical Biology/Wetland Report has been prepared which addresses critical areas and details anticipated wetland impacts subject to jurisdiction under King County Sensitive Area Ordinances and the Army Corps of Engineers.

There are 1.46 acres of wetland that will be impacted as a result of this project, with the inclusion of 0.15 acres of buffer. The proposed mitigation for these impacts will include the enhancement and replacement of 2.78 acres of wetland areas. The wetland mitigation site is located south of SE 256th Street.

4.2.0 EXISTING HYDROLOGY FEATURES

4.2.1 GENERAL

Provide a summary of the existing constructed drainage facilities within the project limits. State the contract number(s) for each feature.

Describe the existing drainage pattern for the project. Note any maintenance problems or unusual conditions.

Include a summary of the detailed physical inspection of the existing storm drains and culverts. Describing their conditions. Methods described in FHWA's Culvert Inspection Manual may be followed. Remedies for deteriorated structures to remain may be proposed.

Discuss existing site conditions. Identify any capacity problems, physical conditions of existing facilities (ponds, culverts, pipes, etc.), groundwater issues, etc. The WSDOT Maintenance Area should be consulted to determine if existing drainage issues are known within project limits.

4.2.2 EXISTING UTILITIES

Note that the profile sheets should also show utility crossings of storm drains, culverts and ditch sections.

Existing utilities that may interfere with proposed drainage are tabulated below by name and location.

PSE (Power)	Sta. 10+15 (LT to RT)
PSE (Gas)	Sta. 15+16 (28' LT) to Sta. 15+25 (25' LT)

Note any crossings of utilities with new storm sewers and culverts on the profile sheets. Call out utility and size of conduit, as well as accurately plot elevations. Potholing may be called for to locate utilities where conflicts are anticipated. Consult the Northwest Region Utility Office to make the necessary contacts for this work prior to finalizing your design.

After review of as-builts obtained from the utility companies(y) <, and potholing> there are no known utility conflicts as a result of the proposed drainage work.

4.2.3 EXISTING FLOOD PLAINS

The project <lies within> <is adjacent to> <is remote from> a flood plain. As determined by reviewing FEMA map _____. This <These> flood plain(s) <is/are> located between Sta. _____ and Sta. _____ and < _____ >.

The web-link below has a map showing the FEMA map number locations:

<http://store.msc.fema.gov/webapp/wcs/stores/servlet/FemaWelcomeView?storeId=10001&catalogId=10001&langId=-1>

Improvements proposed will <will not> modify the flood plan elevation. <Backwater calculations will be found in _(*identify location of calculations*)_ of this report.>

Based on review of the flood plain maps <for _____> *FEMA map number* <_____> *County Washington*, the project site *is/ is not* located within the <_____> River flood plain. The <_____> River (100-year recurring storm event) flood plain elevation is <_____> feet. Since the lowest surface elevation to be disturbed is above this elevation at <_____> feet, no impact to the floodway will result from the proposed improvements. (*Or if project is within flood plain, explain potential impacts and any mitigations needs. Reference section where backwater calculations are provided.*)

4.2.4 EXISTING STREAM CROSSINGS

There <are no> <is one> <are _____> stream crossing<s> on this project

The flow is carried under the highway by <a> culvert<s> located at _____

The highway crosses over <the> stream<s> at bridge crossing number<s>

Bridge numbers may be found in WSDOT's Bridge List, and are posed on each bridge structure. Also see Section 4.2.9 for listing of all bridges within project limits.

<This> <These> stream<s> <are> <may be> considered as <"year-around"> <intermittent> stream<s>.

Streams and Stream Crossings (*List stream names, locations, drainage pathways, and receiving water bodies.*) *List local jurisdiction's stream classification (if applicable) and width of regulatory stream buffer. This information may be found in a Sensitive Area Ordinance or/and a Basin Plan.*

The following streams <river> parallels the highway between Sta. _____ and Sta. _____.
(indicate buffers if applicable.)

<WSDOT's Northwest Region Biologist> <name of publication or report> indicates the following crossings are fish bearing streams <and rivers>.

4.2.5 EXISTING CULVERTS

There <are no> <is one> <are ____> cross-culvert<s> on this project.
<It has> <They have> been visually inspected and <is> <are> functional as is except for:

There <are> <are no> parallel culverts on this project.
They consist of:

Intersection approach culverts located at:

SW 192nd St. Sta. 11+00 to 12+15 (RT) 18 inches

Park Entrance Sta. 12+67 to 12+75 (LT) 12 inches

Private road approach culverts located at:

15220 2nd St. Sta. 19+18 to 19+48 (LT) Conc. 12 inches

15325 2nd St. Sta. 20+98 to 21+20 (RT) CMP 12 inches

<WSDOT's Northwest Region Biologist> <name of publication or report> indicates the following culverts are fish bearing.

4.2.6 EXISTING DITCHES AND OPEN CHANNEL FLOW

There <are> <are no> roadside ditches within the limits of this project.
They have been inspected and are <functional> <need repair at _____>

There are _____ existing water quality swales located at _____ to _____ on the <right> <left>. (*or provide table*)

There are _____ open channel section(s) with <____ x ____ side slopes> <____ ft. high concrete/riprap walls at Sta. _____ to Sta. _____ on the <left> <right>>.

<WSDOT's Northwest Region Biologist> <name of publication or report> indicates the following drainage course(s) are fish bearing.

4.2.7 EXISTING ENCLOSED DRAINAGE SYSTEM

Discuss generally the location of catch basins and storm sewer system within project limits. Indicate direction of flow and outfall from right of way, or project limits.

4.2.8 EXISTING SUBSURFACE DRAINAGE

Subsurface Drainage and Off-Site Water (if these are issues at the project site discuss here, if not delete)

There <are no> <is one> <are ___> subsurface drainage problem<s> <that have been identified. The problem<s> are located at _____ and consist of _____.

<Please refer to the <attached> Soils Report for additional information>.

(Contact NW Region Materials Office to request Soil or Geotechnical Reports.)

4.2.9 EXISTING BRIDGES

There <are no> <is one> <are ___> bridge crossing<s> within the project limits.

The bridge data is as follows:

<u>Number</u>	<u>Name</u>	<u>Span Type</u>	<u>Crossing</u>
			Cedar River
			W. 4 th St.

There <are no> <is one> <are ___> bridge drains on this project.

<It has> <They have> been visually inspected and <will> <will not> be modified.

Modification will consist of: _____

(Bridge drains should be plugged as long as a gutter analysis is performed indicating ponding is limited to acceptable limits.)

<http://www.wsdot.wa.gov/FASC/EngineeringPublications/Manuals/BridgeList2002.pdf>

4.3.1 SOIL AND RESISTIVITY TESTING

pH and resistivity tests were performed for this project. The results indicate a controlling pH of ____ and a soil resistivity of ____ at <all> <the following> pipe locations.

The Design Office shall request testing from the Northwest Region Materials Office. Test results will be forwarded to the Design Office and Northwest Region Hydraulic and Water Quality Office. Provide plan sheets with proposed cross culvert locations with the request for testing prior to Stormwater Report submittal.

pH and resistivity tests dated _____ were performed for ____ (*name of project*) ____ within the project limits and have been used for the selection of pipe alternatives.

The Northwest Region Hydraulic and Water Quality Office and Northwest Region Materials Office maintain files of old testing results. At the discretion of the Northwest Region Hydraulic and Water Quality Office and Materials Office these results may be provided in lieu of performing new testing.

4.3.2 PIPE ALTERNATES

All approved pipe alternates have been considered and acceptable alternates are <shown on page> <listed below>.

4.3.3 INFILTRATION RATE TESTING

The <*Northwest Region Materials Office or name of Consultant*> performed infiltration tests in ____ holes at the locations shown on Figure _____. (*Provide plan sheet locating the test sites.*) The minimum rates observed were _____. Using the criteria from _____ manual the design rate of _____ was <were> used to design (list type of facility) _____.

Sieve analyses have been performed at < _____> location. The results are presented below. The infiltration rate(s) of < _____ in/hrs. > was used for design.

Also review the Project Delivery Memo #02-03 Interim Infiltration Design Guidance (Dec. 18, 2002).

Discuss know soil survey data and infiltration rate(s) in the area. Obtain information from the Northwest Materials Office.

4.3.4

PIEZOMETER AND WELL MONITORING

Piezometers were installed on _____ by the <Northwest Region Materials Office or Headquarters Materials Office or name of Consultant> at the locations indicated on Figure _____. Monitoring has been conducted for _____ months (*Monitoring should be in place a minimum of 18 month prior to proposed Ad of project*). The highest ground water elevations were recorded at _____ ft. on _____, _____, 20____.

There are _____ wells within project limits located at _____. They will be abandoned <capped>, _____. There are _____ wells within _____ feet (*identify protection zone and buffer limits statutes and ordinances*). Well monitoring was initiated on _____ and consists of _____. (*Provide additional information as applicable.*)

Groundwater elevations have been determined to ensure infiltration facilities will function as designed. The minimum distance from pond bottom to water table is _____, at _____

(WSDOT Northwest Region Hydraulic and Water Quality Office recommend a minimum water table distance of 5 feet below pond bottom.)

4.3.5

SOIL BORINGS

Soil borings have been conducted by the WSDOT Headquarters Materials Office on _____ 20____ at the locations shown on Figure/plan sheet _____. The borings confirm the soil types shown on the soil survey maps. Boring logs are included as Appendix _____.

5.0 INSPECTION AND MAINTENANCE SUMMARY

Provide a summary of maintenance responsibilities. List any special maintenance agreements that may have been made.

Limited access facilities are generally maintained by WSDOT unless agreements have been made otherwise. Drainage on other facilities depends upon the area concerned. In incorporated cities the local jurisdiction will be responsible if their populations is above that established by RCW.

Note that Section 4.2.1 contains a note to consult the local WSDOT Maintenance Area regarding any known drainage issues.

Once the contract is complete the Washington State Department of Transportation Maintenance Area ____ will be responsible for the maintenance and operation of the installed drainage facilities. Maintenance procedures outlined in the <1995> WSDOT Highway Runoff Manual and the WSDOT Maintenance Manual will be followed.

Maintenance Areas may be found at the following web-site:

<http://www.wsdot.wa.gov/regions/Northwest/Maintenance/default.htm>

<No maintenance agreements with local jurisdictions have been made for the drainage facilities within project limits. >

It is estimated that the following number of facilities will require inspection and maintenance:

(Modified by the proposed project and existing facilities to remain)

Mowing of grass lined ditches (swales)	_____	<ft> <m>
Number of permanent check dams	_____	
Number of Catch Basins	_____	
Number of Manholes	_____	
Number of Concrete inlets	_____	
Number of Detention Ponds	_____	
Number of Detention Vaults	_____	
Length of enclosed drainage pipe	_____	<ft> <m>
Length of underdrains behind walls	_____	<ft> <m>
Length of other underdrain systems	_____	<ft> <m>

<The City of _____ will maintain the <enclosed drainage system at _____ >
in accordance with RCW 47.24.20. >

Estimate of work hours per year and any other associated costs for maintenance within project limits due to the drainage facility installations should be provided. State if as a result of this project any additional or new maintenance equipment (such as a vactor truck or additional mowing equipment) will be, or should be, considered to maintain this section of highway. A summary of maintenance should be provided in the Design File.

APPENDICES

The following Appendices are included for this report:

Appendix A Hydrologic and Hydraulic Design and Calculations

A1 CALCULATIONS

A.2.1 Gutter Design Calculations *(only included when warranted)*

A.2.2 Sag Design Calculations *(only included when warranted)*

A.2.3 Culvert Design Calculations *(only included when warranted)*

A.2.4 Ditch and Swale Design Calculations *(only included when warranted)*

A.2.5 Enclosed Drainage Design Spreadsheets <Calculations> *(only included when warranted)*

A.2.6 Special Designs *(only included when warranted)*

A.2.10 Pond <and Vault> Calculations *(only included when warranted)*

A2 PLAN SHEETS

A2D Drainage Plan Sheets, and Details

A2DP Drainage Profile Plan Sheets

Appendix B Temporary Erosion and Sediment Control

B1 TESC Monitoring and Maintenance Checksheets

B2 TESC Plan Sheets and Details

B3 TESC BMP CONSTRUCTION CHANGE TRACKING FORM

Appendix C: WAC 173-201A (applicable portion)

Appendix D: STATEMENT OF NON-PRACTICABILITY (if applicable)

Appendix E: DOWNSTREAM ANALYSIS

Appendix G: EROSION CONTROL MIN. REQUIRMENTS CHECKLIST

Appendix F SPECIAL PROVISIONS

F1 Fish and Wildlife and Ecology Regulations – Section 1-07(5)

F2 Drainage Structures, Storm Sewers, Sanitation Sewers, Water Mains and Conduits – Section 7-01

F3 Erosion Control and Water Pollution Control – Section 8-01

Appendix G: Appendix as needed

Appendix H: BORING LOGS *(only if applicable)*

Appendix I: TRAFFIC DATA *(only if applicable)*

Appendix J: SECTION 303(d) Listing *(if not included in text)*

The Contractor, Inspectors, and resource agency personnel will retain appendix B, through F along with the text of the Stormwater Report on site during construction for reference.

Include Appendix A and E for Hydraulic Review.

Photographs may be included to help describe the site.

APPENDIX A

HYDROLOGIC AND HYDRAULIC DESIGN & CALCULATIONS

A.0 Hydrologic and Hydraulic Design

[Provide] hydrologic and hydraulic design calculations for all hydraulic features (e.g., culverts, storm drains, stormwater BMPs, inlets, gutters, ditches, stream bank stabilization). Calculations include both the actual numerical calculations, and a discussion of what assumptions were made to perform the calculations and how the input parameters were determined. The calculations should always include enough supporting information to allow reviewers to completely duplicate the process used through the original design; however, excessive data which duplicates information already provided can often make the calculation process less understandable. Whenever possible, calculation methodologies described in [the WSDOT Hydraulic] manual should be followed. If a different method is selected, the reason for not using the standard WSDOT method should be explained. Figures from this manual, standard WSDOT design forms, and suggested software should be used whenever possible to make the presentation of the information uniform throughout WSDOT.

--- WSDOT Hydraulic Manual Section 1-3

A.1.1 DESIGN ALTERNATIVES

Provide a brief discussion of alternatives investigated including the selected proposal. List the selected alternative below under Design Proposal.

Alternative 1:

Alternative 2:

A.1.2 DESIGN PROPOSAL

Provide a brief description of the alternative selected, and reasons for selecting this alternative (or provide above reasons why the other alternatives were not selected – this may include a cost/benefit analysis).

Proposal:

A.2.0 DESIGN OF HYDROLOGY

The permanent hydraulic and water quality features below have been designed, <or existing features checked,> for this project's work as discussed below:

This section contains the calculations and analyses needed to size storm drains, inlet spacing, sag inlets, culverts, ditches, and other conveyance systems. Calculations include uniform flow spreadsheets, Hydraulic Grade Line (HGL) computations and layouts, culvert software printouts, etc. Structure labeling should correspond directly with the plans and sub-basin maps. Include fish passage designs required for barrier removal, rock check dam calculations, swales sizing, compost berm sizing, silt fence locations and wet pond/vault sizing.

Include only those features relevant to the proposed project.

Hydrology

- _____ *Accurate basin maps(s) prepared showing onsite, offsite contributing areas, Tc routes, for existing and developed conditions*
- _____ *Existing conditions described affecting drainage (soil types, cover type, existing drainage facilities, water table, floodplains)*
- _____ *Time of concentration correctly calculated ($T_c = \text{max, sheet flow} + \text{channel/pipe flow}$). Minimum $T_c = 5 \text{ min}$.*
- _____ *Appropriate methods used to calculate flow rates (rational method, MGS Flood, Stormshed, multiple regression)*

The designer may provide the discussion (text) for each feature with calculations immediately following, or may choose to provide the discussion of each feature together with calculations provided in appendices.

The following computer programs have been used:

Excel spreadsheets for the rational method based on the WSDOT Hydraulic Manual, pages ____ to ____ .

<http://www.wsdot.wa.gov/fasc/EngineeringPublications/Manuals/HydraulicsManual.pdf>

MGS Flood Version 2.20

MGS Flood user information may be found at:

<http://www.wsdot.wa.gov/eesc/design/hydraulics/downloads.htm>

A.2.1 GUTTER DESIGN

Concrete curb and gutter <will> <will not> be used on this project <at the following locations>: _____

Type <A> grates will be used with grate inlets <at _____>

Asphalt curb <is> <is not> required on this project to control slope erosion <at> <at all fill slope locations>

Asphalt curb will be served with <Type 1 Catch basins> <Concrete inlets> and ____ inch pipe. <Concrete inlets are required because of utility conflicts. >

Concrete curb and gutter <will> <will not> be used on this project <at the following locations>: _____

The gutter analysis calculations are <on page ____ > <in Appendix ____ *(if not on following page).*>

____ *Correct design storm frequency (MRI) used: 10 yr*

____ *Max. depth at ETW = 35 mm (0.12 ft), and only shoulder plus ½ the outside traveled lane flooded for design storm. (Limited to shoulder for Interstate). Applies to plugging bridge drains*

____ *Report includes proper design analysis (hand calculations or equivalent computer output)*

____ *Inlets properly spaced to satisfy capacity. Bypass at last inlet < 0.003 m²/sec (0.1 cfs)*

____ *Proper design for inlets in sag locations (i.e. flanking catch basins). 50 year MRI used. A modified grate inlet may be provided in place of flanking catch*

____, 9/19/2003, 9:03 AM

basin design at sag locations.

_____ *CB's/MH geometry (max. knockouts, pipe skews, etc) compatible with pipe sizes. Maximum depth criteria satisfied.*

A.2.2 SAG DESIGN

Within project limits there are _____ vertical sags located at _____ and _____.

Sag calculations are included in Appendix ____ *(if not on following page)*.

A.2.3 CULVERT DESIGN

New Culverts & Modification

Culverts <changes> <relocations> <installations> <extensions> <will> <will not> be required <at _____>

Intersection approach culverts _____

Private road approach and driveway culverts - _____

Culvert Design Sheets are on page(s) _____ to _____ <in Appendix _____>. *(if not on following page)*

Culvert End Sections:

Beveled end sections <will> <will not> be provided <for all new culverts> <for culverts at the following locations _____>.

<Beveled end sections will be added to the following existing culverts:

(Inlet protection / pipe anchors – as needed)
_____.>

Note use of any other end sections (flared, projecting, headwalls etc.)

Safety bars will be provided at _____. *(See Std. Plans and Design Manual.)*

<A> Concrete headwall<s> with safety bars <is> <are> required at <the following locations: _____>.

- ___ Culvert design storm frequency (MRI) used: 25 year
- ___ Environmental section contacted for stream and fish passage status. Report indicates if migrating fish are present in a stream or not. If so, design provides for fish passage.
- ___ Maximum HW/D = 1.25 for design storm frequency
- ___ No upstream property/roadway damage for 100 year storm frequency
- ___ Provide minimum velocity for self cleaning culverts: 1 m/sec (3 ft/sec)
- ___ Report includes design form (HM pg 3-43) or equivalent computer output* for all proposed or impacted culverts. Both inlet and outlet control conditions analyzed
- ___ Proper end treatments are used. (PVC pipe may warrant metal sleeves, Beveled end sections in locations without guardrail. Safety bars as called for in Std. Plans and Design Manual.)
- ___ Proper inlet and outlet protection for scour prevention
- ___ Minimum cross culvert size = 450 mm (18 in) under mainline roadways.
- ___ All allowable pipe alternatives are specified (See Section 4.3.2 of this template)
- ___ pH and resistivity testing results are included (See Section 4.3.1 of this template)
- ___ Proper anchoring of concrete pipe on grades > 10% (20% for CMP)
- ___ Minimum cover of 0.6 m (2 ft) under roadways and 0.3 m (1 ft) off roadway has been provided. Fill height criteria is satisfied for all culverts. Concrete specified for shallow cover installations. See WSDOT Hydraulic Manual Section 8-10.7 for shallow cover installation.

A.2.4 DITCH AND SWALE DESIGN

<No ditches> <Open ditches> will be used on this project. Ditch design is shown on pages _____.

Grass lined ditches - _____

Swales will be provided for water quality at _____.

<No> <Light loose> <Heavy loose> <Quarry Spalls><Special Design> riprap

protection is warranted <at _____>.

For water quality swale design see appendix: _____. (if not on following page)

The average depth of <ditch> <swale> is _____ ft.

For Ditches

_____ Correct design storm frequency (MRI) used: 10 yr.

_____ Report includes proper sizing methodology (hand calculations or equivalent computer output*)

_____ Adequate ditch depth provided 150 mm (0.5 ft) min.

_____ If excessive velocities are present, ditches are properly protected (If velocities are over 0.3 m/sec flow spreaders are provided for swales.)

_____ Minimum ditch slope = 0.5%

_____ Slopes less than 0.5% are provided with underdrain systems.

_____ Check dams have been provided and spaced appropriately.

For Swales

_____ See BMP RB.05 – Biofiltration Swale, on pages 8-47 through 8-49 in the Highway Runoff Manual, or Vol. 5 page 9-2 through 9-19, DOE's Stormwater Management Manual for Western Washington.

A.2.5 ENCLOSED DRAINAGE DESIGN

<No> <An> enclosed drainage system will be used on this project <at the following location>: _____.

There <are> <are no> storm or sanitary sewers that will be affected by this project.

The <_____> sewers will _____.

Subsurface Drainage:

Subsurface drainage is provided at _____ for _____.

Pipe Anchors will be required at _____.

<Backwater checks were performed for _____ parts of the design.

Calculations are shown on page _____.

_____ Correct design storm frequency (MRI) used: 25 yr for trunk lines; 10 yr for laterals – WSDOT, or local jurisdiction (e.g., Snohomish County: 100 yr design

storm for conveyance design).

___ *System is correctly classified as a storm drain*

___ *Minimum velocity 1 m/sec (3 ft/sec) for self-cleaning storm drain is provided*

___ *Acceptable junction spacing is provided ≤ 100 m (300 ft) for pipes < 1200 mm (48 in) and 150 m (300 ft) for pipes ≥ 1200 mm*

___ *Report includes proper design analysis for proposed or improved storm drains*

___ *Capacities exceed calculated pipe flows by sufficient margin.*

___ *Min. diameter = 300 mm (12 in), and 200 mm (8 in) for laterals < 15 m (50 ft).*

___ *Hydraulic grade line analysis provided for systems with significant losses or flat gradients.*

___ *Storm drains stenciling identified.*

___ *All allowable pipe alternates are specified*

___ *Minimum cover provided (2.0 ft.) See WSDOT Hydraulic Manual Section 8-10.7 for shallow cover installation.*

___ *Catchment Areas are defined, quantified, and shown on a figure or plan sheet(s).*

A.2.6 SPECIAL STREAM DESIGNS

Note that the following Sections A.2.6 through A.2.10 may be combined into a single statement when no work is proposed relative to these features.

Headquarters Hydraulic will normally perform special stream designs or other experienced designers as determined in consultation with the Regional Hydraulic and Water Quality Office. Generally special reconnaissance surveys will be required prior to design work. Consult with the Northwest Region Biologist to coordinate any necessary preliminary studies and establish a schedule for design components to complete.

Coordination may also be required with resource agencies. Document any agreements or understandings relative to the design or construction activities.

Design storm stream flows are estimated on page _____.

The project's anticipated impact on stream stability will be <negligible> <mitigated by _____>.

There <are no new> <is one new> <are new> stream crossing<s> on this project.
New stream crossings are proposed at _____

<This> <These> will <not> result in a diversion<s> <that _____>.

Stream bank protection is <not required> <required at _____>. Riprap design is shown on page ____.

Stream Plan Reviewers are: _____ <office, agency>

Calculations for determining streambed gravel gradation are found on page _____
<Appendix ____ > Specifications are included in Appendix ____ .

A.2.8 FLOOD PLAIN MITIGATION

This project <will> <will not> affect the flood plain.

The standard 1.25 HW/D <will> <will not> cause property damage. Calculation checks may be found <on page ____ > <Appendix ____ > .

<The project <will> <will not> encroach on the hydraulic floodway. >

A.2.8A BRIDGE SCOUR EVALUATION

For bridge modifications a bridge scour evaluation shall be completed and provided directly to Headquarters Bridge and the Bridge Preservation Office as noted below:

All bridges over water must be compliant with the National Bridge Inspection Standards; Scour Evaluation of Bridges over Waterways.

A complete scour evaluation includes a scour analysis for both the 100 year and 500 year floods for all piers and abutments in the channel migration zone. If this analysis was completed by a consultant then a report of the analysis must be sent to both HQ Hydraulics and Bridge Preservation Office's. At a minimum this report will include a summary of the analysis, water surface elevations for 100 & 500 year flows; velocities for 100 & 500 year flows; calculated scour depths for all piers & abutments in the channel migration zone; calculations for the aforementioned subjects and a discussion of how the flows were calculated and how the channel migration zone was determined. This analysis must be done based on any proposed channel alterations including the

placement of LWD components. The 100 & 500 year flows and water surface elevations must be included on the bridge plans.

A Bridge Scour Evaluation was performed for the following bridges _____. This report was prepared by _____ and submitted to both WSDOT Hydraulics Office and the Bridge Preservation Offices on _____, 20__.

Additional information may be found in the Washington State Bridge Inspection Manual (M36-64), January 2002. See Sections 1.08 and 5.05 Scour Evaluation.

<http://www.wsdot.wa.gov/TA/Operations/Bridge/WSBIM.pdf>

A.2.9 CHANNEL CHANGES

<No channel changes will be required. >

<One> Channel change<s> <is required> <are required at _____.>

The new channel gradient is _____.

Riprap <is> <is not> required <at _____>.

A.2.10 PONDS AND VAULTS

<No detention ponds or vaults are proposed for water quality or quantity flow on this project. >

Retention/detention ponds and/or vaults <will> <will not> be provided for on this project. The ponds <vault> will be located at <Sta. _____ and have a live storage of _____ cubic feet, and a wet pond area of _____ square feet and _____ cubic feet at a depth of _____ feet>_____. Calculations are provided in Appendix <____> and grading details are provided in Appendix <____> <Depth of cover on <the> vault(s) is _____.>

<A liner consisting of _____ will be provided for the pond(s).>

Water Quality Treatment is provided for _____.

A.2.11 <OTHER HYDRAULIC FEATURES>

Add additional sections to the report to provide discussion and supporting calculations for various hydraulic design features that may be included in your proposal. These may

include Weirs, Flow Splitters, Energy Dissipaters/Dispersion Pipes, Trash Racks, Debris Screens, Slot Drains, etc. Details should be included in the appendices as warranted.

A.2.12 ENHANCED TREATMENT

COIR logs, Filter Media Berms and other filters may be options for enhanced treatment when called for. Details should be provided in the appendices as warranted.

A.3.0 BMP TRIBUTARY AREA SUMMARY

The Northwest Region Stormwater Study Specialist has assigned the following I.D. numbers to the stormwater BMP facility listing within project limits:

*** Contact Ed Johnson at (206) 440-4605 (MS 138 for numbers)*

BMP TRIBUTARY AREA SUMMARY

	BMP I.D. Number	BMP I.D. Number	BMP I.D. Number	BMP I.D. Number
BMP Type				
C-Number (1)				
Sta. to Sta.				
Tributary Area (within R/W) (2)				
Total Tributary Area to BMP				
New Impervious Area				
Total Impervious Area				
Adjacent Non-Tributary Area (3)				
Outfall I.D. (4)				

- (1) Current = proposed work, *(Contract numbers may be found in the NWR database, or identify local jurisdiction which installed the BMP with year of construction.)*
- (2) Including construction easements.
- (3) Includes area within R/W from which stormwater is bypassed the BMP, such as a side slope(s).
- (4) Outfalls are identified in Section 4.1.5 of this report.

** Provided by Design Office – Areas shall be delineated as part of Section 4.1.3B.*

- _____ Best choice of treatment for the site(s) selected. All practical alternatives have been considered i.e. Low Impact Development (LID) techniques.
- _____ Cross section for maintenance access road given.
- _____ Control Structure adjacent to access road.
- _____ Grading Plan provided in appendix.
- _____ Access to pond bottom provided, max. slope 15%
- _____ Infiltration considerations given.
- _____ Wetponds: multi-cell; provides for design storm volume, emergency spillway
- _____ Biofiltration swales, correct design storm; 100 mm (4 in) max. depth for treatment conveys 100 year storm with 0.3 m (1 ft) freeboard; velocity, 0.3 m/sec (1 ft/sec) max. width = 3.1 m (10 ft.); max. side slopes = 3:1, length > 61 m (200 ft). 22 min. residence time and MGS Flood may be used as design criteria. See BMP T9.10 Vol. 5 page 9-2 to 9-19 DOE's Stormwater Management Manual for Western Washington.
- _____ Filter strips: 3.1 m (10ft) min. width; 15% maximum slope, roadway profile less than 5%, ADT less than 30,000

Water Quality Design- This section contains the technical data to justify the treatment facilities including calculations, charts, computer printouts, sketches, etc. A brief discussion of other water quality design alternatives, and justification for the selected method is also presented.

Include only those sections applicable. A Water Quality Discipline Report normally will be prepared by a consultant agreement established by the Design Office in coordination with the Regional EIS staff. (FOR WSDOT PROJECTS ONLY.) Well monitoring and other activities may also be done. Consult with your Water Quality Staff contact.

Water Quality:

1. A Water Quality Discipline Report <was> <was not> done for this project.

a) The report indicated _____

_____. *This has been included at _____*

-
- _____ *Each basin outfall lists any exemptions and reasons exemption applies.*
 - _____ *Criteria for each basin outfall stated and followed in design.*
 - _____ *Each basin outfall has a BMP provided.*

Water Quantity Treatment

- _____ *Best choice of BMP selected for the site(s). All practical alternatives considered.*
- _____ *Total detention volume and release rates are adequate for applicable criteria. (HRM or stricter local design criteria).*
- _____ *Proper design methodology for facility MGS Flood used for sizing facility and control structure*
- _____ *Facility is maintainable: control structure and cells are accessible by vector truck; reservoirs can be drained for cleaning; fencing is used as appropriate for safety.*
- _____ *No conflicts with existing features: soil suitability; proximity to existing features (rock, water table, etc.), slopes; drainage area; siltation. If high water table is present, it's investigated for interference with detention/infiltration.*
- _____ *Design includes emergency overflow spillway, fencing as appropriate, and a debris barrier to protect control structure, when applicable.*

A.4.0 GEOMORPHIC REACH ANALYSIS

Provide this section when stream restoration or channel changes are proposed. Guidance for what to include within this report may be found in the

Washington State Department of Fish and Wildlife, Integrated Streambank Protection Guidelines (June 2002)

<http://www.wa.gov/wdfw/hab/ahg/ispgdoc.htm>

or consult with the Regional Biologist and Hydraulic and Water Quality staff.

A.5.0 DOWNSTREAM ANALYSIS

If a TESC or Stormwater Site Plan is required for this project include this section as an appendix.

The downstream analysis description(s) and accompanying plan sheets <maps> are contained in Appendix ____ .

This section contains the project's Downstream Analysis as described in the 1995 Highway Runoff Manual's Chapter 5, and minimum requirement 7 in Section 2-8 of the Highway Runoff Manual.

Discussion of site conditions as observed during inspection(s) of the site by the designer. This discussion will serve to confirm what is shown on maps and site plans, and it will note any features that will influence drainage design but are different than that shown on maps and site plans.

Identify where the drainage course enters or exits right of way (including Local jurisdictions) and discuss any associated existing BMPs on both private and public property.

_____ *Inspection analysis of downstream watercourses description provided, with names of reviewers and date(s) (indicate office/agency involved)*

_____ *Discussion indicates an onsite check was performed as far as practicable. (Note entry upon private property requires notification of the property owner – contact the Northwest Region Real Estate Services Office). At times observations will only be possible from local roads and aerial photographs.*

_____ *Erosion, sedimentation condition noted.*

_____ *Any damaged or potential problems to facilities noted.*

_____ *Map or plan sheet with downstream route shown or highlighted.*

_____ *Effects on downstream habitat and channel stability has been evaluated (calculations and reference materials provided).*

A.6.0 STATEMENT OF NONPRACTICABILITY

A statement of Non-practicability has been provided for this project and is contained in Appendix _____. *Include only if applicable.*

A.7.0 TRAFFIC ANALYSIS DATA

<This project includes the improvement to a safety rest area. Traffic Analysis data is contained in Appendix ____.> *Include only if applicable.*

(Provide traffic analysis data only if required in relation to hydraulic design – Data should be provided when safety rest areas are included in the design.)

<Not applicable for proposed work. No Rest Area improvements are proposed.>

A2 D APPENDIX A2-D -- DRAINAGE PLAN SHEETS, AND DETAILS

Provide preliminary plans for the project showing locations of all the hydraulic and water quality features. These plan sheets may change before final PS&E but should be of the same quality that is used for final PS&E. Changes may require a supplement to the hydraulic report prior to P.S. & E. turn-in.

Plan sheets may be combined with catchment area plans, showing areas tributary to each drainage structure, if clarity can be maintained.

Include the preliminary, PS&E - quality CADD plans sheets showing all drainage improvements. Include plans of water quality and quantity facilities showing grading. See WSDOT's Plans Preparation Manual for formatting.

A2 DP APPENDIX A2-DP – DRAINAGE PROFILE PLAN SHEETS

Provide plan sheets of profiles of all culverts, storm drains, stormwater BMPs, ditches, and channels. Similar to the plan sheets, these should be done to the same quality as final PS&E drawings. See WSDOT's Plans Preparation Manual for formatting.

APPENDIX B

TEMPORARY EROSION AND SEDIMENT CONTROL

B.0 TEMPORARY EROSION AND SEDIEMENT CONTROL PLAN

B.1.0 PURPOSE OF PLAN

The Temporary Erosion and Sediment Control (TESC) Plan describes the temporary Best Management Practices (BMPs) selected for stormwater detention and water quality treatment during construction of this project. A BMP is a physical, structural, and/or managerial practice that prevents or reduces the pollution of water. The goal of the TESC Plan is to prevent turbid discharges and sediments from leaving the site and to meet Water Quality Standards as defined in Washington Administrative Code (WAC) 173-201A. Should field conditions during construction require additional temporary BMPs or if a change in placement of temporary BMPs is needed, this plan shall be modified by the Contractor's Erosion and Sediment Control (ESC) Lead and WSDOT Project Office Inspector(s) (*if and as assigned*), and approved by the Engineer. The objectives of this TESC Plan are to:

Implement BMPs to minimize erosion and sedimentation from rainfall at construction sites, and to identify, reduce, eliminate, or prevent the pollution of stormwater.

Prevent regulatory violations of surface water quality, ground water quality, or sediment management standards.

Prevent, during the construction phase, adverse water quality impacts including impacts on beneficial uses of the receiving water by controlling peak rates and volumes of stormwater runoff at outfalls from right of way or parcel limits and downstream of the outfalls.

During active work, the Contractor shall keep the TESC Plan and BMP inspection reports on site. When construction activity is complete, the WSDOT Project Office (*if applicable*) shall retain the TESC Plan, inspection reports, and all other reports required by the contract and permitting authorities.

The TESC Plan should be prepared by a certified Construction Site Erosion Control individual who has attended the Construction Site and Erosion and Sediment Control Certification Course (CSESC Certification Course). WSDOT employees should request classes through WSDOT. Consultants may obtain information for classes provided by AGC at the following web-site. Re-certification is every three years.

http://www.wsdot.wa.gov/environment/eao/hazmat/haz_training.htm and
<http://www.agcwa.com/public/edPrograms.asp>

http://www.agcwa.com/public/education_foundation/env_reg/soil_sched.asp

Another option available for Consultants is to contact the AGC and acquire a certified CSESC specialist to complete the TESC elements of the report in lieu of registering and attending the course below.

Designer's Name: _____

CSESC Certification Course Expiration Date: _____

B.2.0 CONSTRUCTION POLLUTION PREVENTION TEAM

(Is Applicable for WSDOT Constructed Projects Only)

The pollution prevention team is responsible for implementing, enforcing, maintaining, and revising the Spill Prevention and Countermeasures Control Plan (SPCC) and TESC Plans. The Contractor <or Consultant> shall complete the remaining portions of the Construction Pollution Prevention Team form, presented in Table <_>, by the pre-construction meeting.
(Is Applicable for WSDOT Constructed Projects Only)

The Contractor is responsible for installing and maintaining all temporary BMPs through the duration of the contract and removing the BMPs when they are no longer needed per the requirements in this plan.

Whenever an inspection reveals that the BMPs specified in the TESC Plan may be inadequate, due to the actual or potential discharge of a significant amount of any pollutant, the Contractor's ESC Lead and WSDOT's inspector shall modify the TESC Plan as appropriate, with the Engineer's approval.

The Contractor shall designate and make known the firm's ESC Lead and Spill Prevention, Control, and Countermeasures (SPCC) Lead to the Project Engineer during the pre-construction meeting. Both the ESC and the SPCC Leads will have the training to administer active and effective construction site erosion and spill control program. If qualified, one person may be designated as both the ESC Lead and SPCC Lead.

The Design Office is aware of the following construction projects adjacent to or upstream of project limits to occur throughout the construction schedule of the proposed work.

(List project name, location, and contracting agency or developer with anticipated advertisement date/length of project. Add this information to Special Provision 05141.FR1)

B.2

CONSTRUCTION POLLUTION PREVENTION TEAM TABLE

Table <__> Construction Pollution Prevention Team (Applicable to WSDOT Constructed Projects Only)				
Affiliation	Title	Name	Number	Responsibilities
WSDOT	Area Administrator			Transportation program delivery in the <__> Area.
WSDOT	Engineering Manager			Assists the Area Administrator.
WSDOT	Construction Project Engineer			Contract administration; NPDES point of contact.
WSDOT	Chief Inspector			Oversees administration of the contract including maintenance, revision, and implementation of the TESC Plan. Ensures that TESC monitoring takes place, certifies compliance with the TESC Plan and NPDES permit, and keeps all records.
WSDOT	Environmental Permit Specialist			Assists the Project Office to ensure compliance with all environmental permits and provides project assistance as needed.
WSDOT	Water Quality Engineer			Assists the Project Office to ensure compliance with the NPDES Municipal permit; provides project assistance as needed; evaluates the performance of BMPs; and provides direction for field water quality monitoring as requested.
Contractor	Project Engineer			Contract administration.
Contractor	Chief Inspector			Oversees administration of the contract.
Contractor	Erosion and Sediment Control (ESC) Lead*			Ensures that BMPs are in place and functioning as designed; responds to TESC directives from WSDOT; inspects BMPs weekly and following storms; identifies necessary changes to BMPs; and discusses changes of the TESC plan with WSDOT Chief Inspector.
Contractor	Spill Prevention, Control and Countermeasures (SPCC) Lead*			Develops and implements the SPCC Plan. In the event of a hazardous material spill, the SPCC Lead is the designated person to respond and alert the appropriate authorities.
Ecology	Water Quality Inspector			Investigates project practices and discharges to determine whether or not compliance with water quality standards and the TESC Plan is achieved. Contacts WSDOT Project Engineer and Environmental staff regarding compliance.
Applicable County, City or Municipality	Site Development Specialist			Investigates project practices and discharges to determine whether or not compliance with water quality standards, TESC Plan and permits are achieved. Contacts WSDOT Project Engineer and Environmental staff regarding compliance.
WSDOT	Emergency Contact for Water Quality Violations	Ben Brown Martin Palmer	WSDOT Radio Operator (206) 440-4490	In the event of a violation of water quality standards is responsible for reporting per IL 4055 http://wwwi.wsdot.wa.gov/docs/OperatingRulesProcedures/4055.pdf
* The Contractor designates the ESC and SPCC Leads. The ESC Lead must be certified through WSDOT's Construction Site Erosion and Sediment Control Course. The SPCC Lead must be certified through WSDOT's Hazardous Materials Course.				

B.3.0 EROSION AND SEDIMENT CONTROL MINIMUM REQUIREMENTS

Edit the following to include the BMPs proposed on your specific project.

Minimum requirements of the WSDOT Highway Runoff Manual for erosion and sediment control will be implemented during the design and construction of this project. These requirements include the following:

(It is recommended that Section B.3 be added to the TESC Plan Sheet Notes and if this is a WSDOT constructed project coordinate BMPs of choice with the applicable WSDOT Construction Office.)

Note to writer: The following section follows the format of the WSDOT Environmental Procedures Manual. Appendix G of the template is a checklist based upon the Highway Runoff Manual. The content requirements for both manuals are provided for below in this template.

B.3.1 STABILIZATION AND SEDIMENT TRAPPING

All exposed and unworked soils shall be stabilized according to the following criteria:

From October 1 to April 30, no exposed and unworked soils shall remain unstabilized (exposed) for more than two days. Non-erodible, clean, granular base materials shall be applied to stabilize all trafficked areas.

From May 1 to September 30, no exposed and unworked soils on slopes shall remain unstabilized (exposed) for more than seven days.

Stormwater runoff shall pass through <_____> prior to leaving the site

(specify the BMP to be used such as a sediment pond or suitable sediment trap that include geotextile-encased check dams, filter fences, and/or gravel filters).

B.3.2 DELINEATE CLEARING AND EASEMENT LIMITS

All existing vegetation (trees, bushes, shrubs, grasses) shall be preserved when not required for the construction of the project. When called for in the contract plans, special provisions or standard specifications, the Contractor is required to survey, stake, and flag the clearing limits shown in the Plans and/or areas not to be disturbed including easements, setbacks, sensitive and critical areas and associated buffers, and buffers for drainage courses before

any clearing or grubbing can begin. The Engineer shall be notified 24 hours in advance of the clearing limits being staked. Laths shall be surveyed in and placed at angle points and in 50 feet intervals on tangents and curves. Laths shall have "Clearing Limits" written on them and survey flagging applied. Clearing limits should be checked periodically, stakes should be replaced immediately if disturbed.

B.3.3 PROTECTION OF ADJACENT PROPERTIES

Properties adjacent to the project site shall be fully protected from sediment deposition. Suitable sediment traps shall be installed on the project site to prevent sediment runoff. The sediment control BMPs are described in Section B.4.2 and located on the TESC plan sheets in Appendix < ____ >.

B.3.4 TIMING OF SEDIMENT TRAPPING MEASURES

Sediment ponds and traps, perimeter dikes, sediment barriers, and other BMPs intended to trap sediment on site shall be constructed as a first step prior to any land disturbing activities. These BMPs shall be functional before land disturbing activities take place. Earthen structures such as dams, dikes, and diversions shall be seeded and mulched, or otherwise stabilized, according to the timing and dates indicated in Section B.3.1 above. The schedule for construction of BMPs designed to trap sediments is presented in Section A.2.0.

B.3.5 CUT AND FILL SLOPES

Cut and fill slopes shall be constructed in a manner that will minimize erosion. Cut and fill slopes shall have erosion control BMPs installed for slope protection as needed. During construction, exposed slopes shall have seed, fertilizer, and mulch applied. When seeding and mulching are not possible, plastic covering or other suitable cover shall be applied. Finished slopes shall have permanent seeding applied between March 1 and May 15 or August 15 and October 1. Outside these specified application periods, temporary cover shall be applied.

B.3.6 CONTROLLING OFF-SITE EROSION

Properties and waterways downstream from the project shall be protected from erosion due to increase in volume, velocity and peak flow rate of stormwater runoff from the project site.

(If applicable, state the measures that will be taken to control off-site volume, velocity, and peak flow rates of stormwater or reference <1995> Highway Runoff Manual Section 2.4.).

Every effort shall be made to separate or tight line offsite stormwater runoff, from roadway and construction site runoff flows. Reduction of flows minimizes the amount of water treatment required.

B.3.7 STABILIZATION OF CONVEYANCE CHANNELS AND OUTLETS

In the Puget Sound watershed all temporary on-site conveyance channels shall be designed, constructed and stabilized to prevent erosion from the expected velocity of flow from a 2-year 24-hour frequency storm for developed conditions. Stabilization adequate to prevent erosion at outlets, adjacent stream banks, slopes, and downstream reaches shall be provided at all conveyance systems.

Conveyance channels will be stabilized with <_____> *(specify the BMPs to be used such as geotextile-encased check dams and rock check dams)* to minimize both the transport of sediment and erosion of the channel. Conveyance system outlets will be stabilized with <_____> *(specify the method; e.g., quarry spalls)* to prevent erosion at the discharge point.

B.3.8 STORM DRAIN INLET PROTECTION

All storm drain inlets used to discharge runoff from the construction site shall be protected so that stormwater runoff shall not enter the conveyance system without first being filtered or otherwise treated to remove sediment.

The <_____> *(State the number of drains.)* storm drain inlets on the project site will be protected using <_____> *(specify the BMPs.)* Silt-laden runoff shall be prevented from entering culvert ends by installing <_____> *(specify the BMPs, e.g., geotextile-encased check dams and gravel filter berms)* in the ditches or swales flowing to the culvert.

B.3.9 UNDERGROUND UTILITY CONSTRUCTION

No more than 500 feet of storm drain or utility trench shall be opened at one time. Where consistent with safety and space considerations, excavated material shall be placed on the uphill side of the trench. All de-watering devices shall discharge into a sediment trap or sediment pond.

(If any of these items apply, describe the measures to be taken e.g., approximately 500 feet of trenching will be opened <_____>. no trenching is proposed for this project, etc.)

B.3.10 CONSTRUCTION ACCESS ROUTES

Wherever construction vehicle access routes intersect paved roads, provisions must be made to minimize the transport of sediment and mud onto the paved roads. If sediment is transported onto a road surface, the road shall be cleaned thoroughly at the end of each day. Sediment shall be removed from roads by shoveling or sweeping and be transported to a controlled sediment disposal area. Street washing will be allowed only after sediment is removed in this manner.

(State how sediment transport off-site will be reduced; i.e., during construction activities roads will be cleaned as specified above. In addition, stabilized construction entrance(s) and tire wash areas will be constructed as described in Standard Specification Section 8-01.3(6) and shown on the TESC plan sheets in the Appendix.)

B.3.11 REMOVAL OF TEMPORARY BMPS

All temporary erosion and sediment control BMPs shall be removed within 30 days after final site stabilization is achieved or when the Engineer determines that the temporary BMP is no longer needed. The Contractor shall remove the item, then clean, restore and permanently stabilize all disturbed areas to the Engineer's satisfaction. Trapped sediment shall be removed or stabilized on site.

B.3.12 DEWATERING CONSTRUCTION SITES

Dewatering devices shall discharge into a sediment trap or sediment pond. The rate of dewatering discharge shall not exceed the design capacity of the sediment trap or pond. If required in the project's special provisions a dewatering plan shall be submitted for approval before implementation.

(State whether dewatering will be conducted as part of this project, and if so what measures are being taken to control sediment transport off-site. If this project is located within King County right-of-way, include the following text:

Specific King County Requirements. *In the areas shown in the Plans as requiring special dewatering plans, the Contractor shall prepare a dewatering plan that include details and construction sequences that address the handling and disposal of turbid water in these sensitive areas. The Contractor shall submit the dewatering plan to the King County Department of Development and Environmental Services (DDES) with a copy to the Engineer at least one week prior to commencement of any construction activity, including erosion control. No work shall commence in these sensitive areas or their buffers without approval of the dewatering plan by DDES.*

In the event that the contractor shall encounter areas that require dewatering regardless of whether these areas have been indicated on the approved plans or not, no work, except the

erosion control measures as needed to remedy unforeseen water quality problems, shall commence or continue until a dewatering plan approved by King County DDES, is obtained. The Contractor shall be responsible for preparing, submitting, and obtaining approval for dewatering plans in such situations. No groundwater withdrawals are to be allowed, unless the Contractor obtains the appropriate permits).

B.3.13 MAINTENANCE

All temporary and permanent erosion control BMPs shall be maintained and repaired as needed to assure continued performance of their intended function per Standard Specification 8-01.3(11).

B.4.0 TEMPORARY EROSION AND SEDIMENT CONTROL BMPS

This section presents the temporary BMPs that were selected to control erosion and sediment during construction of this project. The BMPs selected include Source Control BMPs, Sediment Control BMPs, Structural Erosion Control BMPs, and Experimental and Other BMPs.

The BMPs were selected based on the potential for erosion at the site and the potential for impacts to surrounding sensitive areas (i.e., wetlands and water bodies). The erosion potential for this project was determined to be (low, moderate, high). Describe what factors led to the selection of the erosion potential ?(Slope, slope length, amount of disturbed soil, proximity to receiving water bodies, outfalls, etc.) The designer should discuss how the project will be “staged” to the extent possible to disturb as little of the site for the shortest amount of time during construction.

The type and location of TESC BMPs used during construction may vary from those presented below. This plan may be modified by the Contractor in the field as necessary to control erosion and the migration of sediments at the project site. The proposed locations of the selected TESC BMPs are presented on the TESC Plan Sheets presented in (specify where in this document the plans are located (i.e., Appendix <_____>, Plan Sheets <_____>* and <_____>*).*

B.4.1 SCOURCE CONTROL BMPS

Source control BMPs selected for this project include _____

(List cover practices to be used, such as seeding, mulching, matting, PAM, plastic cover, straw cover etc. Describe selected BMPs and specify type of seed, mulch, or matting to be used, i.e., straw mulch, wood fiber mulch, bonded wood fiber matting, etc. Describe where each BMP will be constructed and reference the specific TESC Plan Sheet showing the proposed location.)

Minimize natural vegetation removal. Vegetation restoration is discussed in the Vegetation Management Plan Section B3.5. Street sweeping Proper storage and handle of potential pollutions will be covered in the Spill Prevention, Control and Countermeasures Plan.

B.4.2 SEDIMENT CONTROL BMPS

The BMPs selected for the control of sediment include...

(List the BMPs selected for controlling sediment, such as filter fence, geotextile-encased check dams, brush barrier, gravel filter berm, storm drain inlet protection, straw wattle, sediment trap, and sediment ponds or basins.

B.4.3 STRUCTURAL EROSION CONTROL BMPS

Structural Erosion Control BMPs selected include _____ .

(List BMPs such as stabilized construction entrance, tire wash, construction road stabilization, dust control, pipe slope drains, level spreader, interceptor dike and swale, etc.)

B.4.4 EXPERIMENTAL AND OTHER BMPS

(If applicable include this section describing any proposed experimental or other BMPs. Otherwise say "No experimental BMPs are proposed for this work.") See the Highway Runoff Manual Section 4-4.2 regarding approval of Experimental BMPs. Attach copies of documentation and approvals for use of Experimental BMPs in your report.

B.5.0 CONSTRUCTION INSTALLATION, INSPECTION AND MAINTENANCE SCHEDULE

This project will be constructed in accordance with the Standard Specifications contained within Section 8-01, and the special provisions included in Appendix ____ .

The project will be inspected and maintained in accordance with Section 8-01.3(1)B.

B.5.1 WATER QUALITY MONITORING

The Contractor ESC Lead, Environmental Construction Liaison, or Water Quality Engineer may determine that water quality monitoring is warranted. If needed, the <WSDOT> or <Contractor> or <Developer> shall measure and record turbidity, pH, temperature and dissolved oxygen at all of the identified site discharge points after each 24-hour rainfall events of 0.5 inches or greater, <per Instructional Letter (IL) 4049.00>. If turbidity at any of the site discharge points exceeds the water quality standards (WAC 173-201A), then the Contractor shall make appropriate adjustments to the TESC plan <and follow IL 4055.00 Environmental Compliance protocol if

warranted>. Turbidity will be measured with a HACH 2100P portable turbidity meter or equivalent and reported in Nephelometric Turbidity Units (NTUs). *(If it is known that monitoring will be required, revise this text to describe required monitoring.)*

If warranted during the site work, the responsible party shall follow Section 8-01.3(1)B in the Standard Specifications, supplemented by the following:

1. The ESC Lead shall visually monitor off-site water discharge for sedimentation and turbidity. If turbid discharges are observed the turbidity shall be determined by use of a turbidity meter. Turbidity shall not exceed 5 NTU over background turbidity when the background turbidity is 50 NTU or less, or have more than a 10 percent increase in turbidity when the background turbidity is more than 50 NTU. If turbidity at any of the site discharge points exceeds the water quality standards (WAC 173-201A), see IL 4055 for environmental reporting guidance, then the ESC Lead shall make adjustments in the TESC Plan. A formal Water Quality Monitoring Plan may be implemented. Notify the WSDOT chief inspector *(if applicable)* when any turbid discharges are observed and when measurements are taken with a turbidity meter.
2. Visually monitor for turbid water or off-site sedimentation. Check for potential BMP improvements if sediment is accumulating off-site, or if the discharge appears turbid. The ESC Lead shall be responsible for confirming that no turbid water or sediment leaves the site.

The responsible party shall update the TESC plan sheets *(apply to WSDOT constructed projects only)* to reflect changing field conditions.

B.5.2 PERMANENT STABILIZATION *(APPLICABLE TO WSDOT CONSTRUCTED PROJECTS ONLY)*

The permanent stabilization BMPs for this project consist of:

- 1) reestablishing vegetation;
- 2) outlet protection; and,
- 3) planting trees and shrubs.

Disturbed areas will be planted with a seed/mulch mixture to prevent soil erosion. All new storm sewer outlets will be lined with quarry spalls to prevent scouring. In addition wetland vegetation, detention area and riparian buffer plantings will be provided to stabilize and prevent erosion.

Seeding and planting shall be done according to the dates in the Special Provisions or the Standard Specification unless otherwise approved by the Engineer.

B.6.0 **VEGETATION MANAGEMENT PLAN** (*APPLICABLE TO WSDOT CONSTRUCTED PROJECTS ONLY*)

WAC 173-270-040 states that the purpose of vegetation management in highway rights of way is to establish and maintain stable plant communities that resist encroachment by undesirable plants, noxious weeds, and other pests; meet WSDOT operational, health, natural resources and environmental standards; be cost effective; and protect the public investment with minimal negative impacts on the environment. This WAC also requires a vegetation management program for all state highways within the Puget Sound basin. The Roadside Manual (M25-30) has been prepared to coordinate and guide the management of Washington State highway roadsides including planning, design, construction, and maintenance activities.

The Vegetation Management Plan is designed to have self-sustaining plant communities, which will minimize long-term maintenance and the requirements for fertilizer and pesticide use. Vegetation provides for the following functions along the highway: traffic calming, stress reduction, buffer and shading, stream bank stabilization, wetland mitigation, water quality improvement, water retention and smoothing of flows, air pollution mitigation, noise abatement, wildlife habitat, screening and other visual quality, as well as providing for corridor continuity. Plantings function as treatment areas, provide a complete vegetation cover, encourage desirable volunteer growth by allowing natural succession to take place, and discourage invasive species and noxious weeds.

(Revise the following text to describe the actual vegetation plan)

Permanent erosion and sediment control on this project will consist of seeding, fertilizing, and mulching. Disturbed areas will be re-seeded with permanent cover as soon as possible. If exposed areas will remain undisturbed for more than seven days in the summer months, or more than two days in the winter months, temporary cover practices will be provided.

Where possible, existing areas with vegetation will remain undisturbed unless no alternative exists. . Undisturbed areas provide a positive buffer for stormwater flows between the improvements associated with the project and sensitive areas near these improvements.

B.7.0 **SPILL PREVENTION AND COUNTERMEASURE CONTROL (SPCC) PLAN**

The Contractor shall develop a Spill Prevention, Control and Countermeasures (SPCC) Plan per the amendment to the Standard Specifications §1-07.15(1). *An example format template is available at the following website*

http://www.wsdot.wa.gov/environment/eao/hazmat/haz_docpubs.htm

This plan is for control of pollutants on construction sites that have the potential to harm human health or the environment, (RCW 70.105, Hazard Waste Cleanup-Model Toxics Control Act). The plan shall address sources of pollutants, critical receptors, spill prevention and containment, spill response, and reporting requirements. This plan is expected to address comprehensive control of pollutants that include, but are not limited to, management of fuels, oils, solvents, and chemicals used in operations and maintenance, solid waste decomposition products determined by Department of Ecology to present a hazard, and maintenance and management of contaminated soils and water encountered or generated on the construction site.

The Contractor shall make available at the construction site an individual designated as the SPCC Lead that is knowledgeable in hazardous waste recognition, and spill control and response. The SPCC Lead is the person responsible for developing and implementing the SPCC Plan. In the event of a hazardous material spill, the SPCC Lead is the designated person to respond and alert the appropriate authorities. At a minimum this individual will have training or experience in the following:

- .1 Knowledge of basic hazard and risk assessment technique*
- .2 Knowledge of the proper selection and use of personal protective equipment*
- .3 An understanding of basic hazardous materials terms.*
- .4 Ability to perform basic control, containment, and/or confinement operations within the capabilities of the resources and personnel protective equipment available.*
- .5 Knowledge of how to implement decontamination procedures.*
- .6 An understanding of relevant standard operating procedures and termination procedures contained in the SPCC.*

The Contractor shall take measures to prevent solid wastes from becoming a source of pollutants to stormwater or decomposition products from entering waters of the state. The Contractor should use best available practices to contain, segregate, store, and dispose of solid wastes consistent with state and local statutes and ordinances controlling solid waste disposal. BMPs C-1.10 through C-1.20 in the current Highway Runoff Manual should be considered for incorporation into the SPCC where applicable. BMPs used on this project are not limited to those mentioned above.

APPENDIX B.1: TESC MONITORING AND MAINTENANCE CHECKSHEETS

Fill out the appropriate portions of this form as work progresses. Make additional copies of this form as needed. Keep all completed copies of this form with the on-site TESC Plan. Reflect all TESC changes on the TESC plan sheets.

Project Name: _____

Prior to Earth Work

BMPs are in place prior to construction

(signature) _____ *Date:* _____

During Earth Work

<i>Date</i>	<i>Name</i>	<i>BMP & Location</i>	<i>Repairs/Modifications Needed</i>	<i>Comments/Sampling Results</i>

The following is an alternative Appendix B.2 TESC MONITORING AND MAINTENANCE CHECKLIST to be used for major projects.

INSPECTORS ENVIRONMENTAL COMPLIANCE CHECKLIST

Contract Number: _____ Project name: _____

PE: _____

Chief Inspector: _____ Phone and/or Cell _____

Site Inspector: _____ Phone and/or Cell _____

Date: _____ Weather: _____

SSP on site: Y N

Modifications shown on SSP: Y N

Inspector log for BMP maintenance: Y N

Up to date: Y N

* see IDR for history of all inspections

Describe location being inspected:

Clearing Limit Fence	Y	N	Comments:
-----------------------------	---	---	-----------

Date installed:

Properly installed: Y N

Maintained: Y N

Condition:

Ponds	Y	N	Comments:
--------------	---	---	-----------

Date installed:

Type: Temporary Permanent

Maintained: Y N Y N

Condition:

Silt Fence	Y	N	Comments:
-------------------	---	---	-----------

Date installed:

Properly installed: Y N

Spacing Y N

Trenched in Y N

Proper posts Y N

Backing wire Y N

Maintained: Y N

Condition:

Straw Bales	Y	N	Comments:
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Date installed:

Properly installed: Y N

Low point Y N

Trenched in Y N

Proper posts Y N

Maintained: Y N

Condition:

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Storm Inlet Protection	Y	N	Comments:
-------------------------------	---	---	------------------

Date installed:

Type:

Maintained:

Condition:

Silt Sock	Fabric cover	Fabric & Gravel	Straw Bale
Y N	Y N	Y N	Y N

Check Dams	Y	N	Comments:
-------------------	---	---	------------------

Date installed

Type:

Properly installed:

Low point

Maintained:

Condition:

Rock	Sandbag	Other
Y N	Y N	Y N
Y N	Y N	Y N
Y N	Y N	Y N

Sediment Trap	Y	N	Comments:
----------------------	---	---	------------------

Date installed:

Maintained:

Condition:

Construction Entrance	Y	N	Comments:
------------------------------	---	---	------------------

Date installed:

Type:

Maintained:

Condition:

Rock	Wood Chip	Other
Y N	Y N	Y N

Tire Wash	Y	N	Comments:
------------------	---	---	------------------

Date installed:

Maintained:

Condition:

Ground Cover	Y	N	Comments:
---------------------	---	---	------------------

Date installed:

Type:

Properly Installed:

Maintained:

Condition:

Matting	Mulch	Straw	Plastic
Y N	Y N	Y N	Y N
Y N	Y N	Y N	Y N

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Vegetation Preservation	Y	N	Comments:
Maintained:	Y	N	
Condition:			

Dust Control	Y	N	Comments:
Type:			
Frequency:			
Effective:	Y	N	

Pipe Slope Drains	Y	N	Comments:
Date installed:			
Maintained:	Y	N	
Condition:			

Interceptor Dike	Y	N	Comments:
Date installed:			
Properly installed	Y	N	
Maintained:	Y	N	
Condition:			

Level Spreader	Y	N	Comments:
Date installed:			
Properly installed	Y	N	
Maintained:	Y	N	
Condition:			

Brush Barrier or Filter	Y	N	Comments:
Date installed:			
Properly installed	Y	N	
Maintained:	Y	N	
Condition:			

Seeding & Planting	Y	N	Comments:
Date Seeded or Planted:			
Maintained:	Y	N	
Condition:			

Swales	Y	N	Comments:
Date completed:			
Date fully vegetated:			
Maintained:	Y	N	
Condition:			

Please return to [Water Quality Engineer](#) at Environmental Services MS 138

Cross Culverts on Project ? Y N (Keep notes as this is pass through water)
Locations:

Has **PAM** been applied at this site ? Y N Date(s) applied:

- For information on PAM application contact the WSDOT Area NWR Water Quality Specialists or 206-440-4602.

Describe site appearance:

Have any other methods or modifications been used on this project to prevent erosion or to control sediment ?

Are there any persistent problem areas ? Where ?

Inspected by:

Washington State Department of Transportation

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Please return to [Water Quality Engineer](#) at Environmental Services MS 138

APPENDIX B.3: TESC BMP CONSTRUCTION CHANGE TRACKING FORM

Fill out the appropriate portions of this form as work progresses. Make additional copies of this form as needed. Keep all completed copies of this form with the on-site TESC Plan. Reflect all TESC BMP changes on the TESC plan sheets.

Project Name: _____

Change Number	Change Date	Name of Person Making BMP Change	CSESC Certification Expiration Date	Description of TESC Plan Sheet Change With Drawing Number

B1 APPENDIX B.1 -- TESC MONITORING AND MAINTENANCE CHECKLIST
B2 APPENDIX B.2 -- TESC PLAN SHEETS AND DETAILS
B3 APPENDIX B.3 -- BMP CONSTRUCTION CHANGE TRACKING FORM
C APPENDIX C -- WAC 173-201A (applicable portion)

A

Sections of WAC 173-201A are posted on the WSDOT Outlook folder under

All Public Folders/WSDOT/NW Region/NW Environmental/NW Water Quality/General/ WAC 173-201A Water Quality Standards

Or may be found at the following web-site: NOTE: Only include applicable portions in this appendix.

<http://www.leg.wa.gov/wac/index.cfm?fuseaction=chapterdigest&chapter=173-201A>

D APPENDIX D -- STATEMENT OF NON-PRACTICABILITY

Provide a statement of non-practicability for Fish Blockage, Water Quality and Quantity retrofitting. See Section 5-2.11 of the 1995 WSDOT Highway Runoff Manual and Draft Dec. 17, 2001 document listed below. Include a brief outline of the maximum treatment provided (Level of Retrofit provided) as a result of this project's work. Include scope and funding for the project in the statement. When ADT is above 50,000 include a discussion regarding Enhanced Treatment. See IL 4020.02.

WSDOT Headquarters Environmental Affairs Office has prepared a "Determination of non-Practicability for Design and Construction of Stormwater Management Facilities BMPs Within Highway Right-of-Ways: Draft December 17, 2001" document. It is the Region's direction to use this document at this time to prepare "Statements of Non-practicability." See the posting on the WSDOT Outlook Folder:

All Public Folders/WSDOT/NW Region/NW Environmental/NW Water Quality/General/Practicability of Retrofitting Existing Roadways

E APPENDIX E -- DOWNSTREAM ANALYSIS

See Highway Runoff Manual Section 5-2.9 “Downstream Analysis Report” for guidance on conducting a review and preparing a report.

F APPENDIX F -- SPECIAL PROVISIONS

Provide a listing of the GSP's to be included in the following sections along with any fill-ins and latest revision date. Also include the text of any special provisions unique to this particular project proposed for P.S.& E.

F.1 FISH AND WILDLIFE AND ECOLOGY REGULATIONS – SECTION 1-07(5)

F.2 DRAINAGE STRUCTURES, STORMSEWERS, SANITATION SEWERS, WATER MAINS AND CONDUITS – SECTION 7-01

F.3 EROSION CONTROL AND WATER POLLUTION CONTROL – SECTION 8-01

G APPENDIX G -- EROSION CONTROL MIN. REQUIREMENT CHECKLIST

1. EROSION AND SEDIMENT CONTROL

- ☐ Temporary Conveyance Systems designed for 2-year design storm.
- ☐ Measures provided to protect adjacent

2. Preservation of the Natural Drainage System

- ☐ Outfalls locations identified in the report and locations retained, or justification for relocation provided.

3. Source Control of Pollutants

- ☐ Minimize natural vegetation removal
- ☐ Vegetation restoration after construction provided for
- ☐ Vegetative buffers around water bodies to be maintained
- ☐ A spill control and Countermeasures Plan is called for in the Special Provisions
- ☐ Vegetation restoration/Seeding is provided for disturbed areas.
- ☐ Street sweeping and minimization of fugitive dust is provided for.

4. Water Quality Treatment

- ☐ BMPs provided for new impervious area of each outfall location for water quality (6 mo., 24 hr. storm event).
- ☐ Retrofit considered and implement, or statement of non-practicability provided.

5. Water Quantity Treatment

- ☐ Exemptions listed
- ☐ BMPs provided for new impervious area of each outfall location.
- ☐ Retrofit considered and implement, or statement of non-practicability provided.
- ☐ Factor of safety applied to detention BMP design

6. Wetlands

- ☐ Wetlands identified, discussed, and delineated on plans
- ☐ Stormwater runoff discharges to wetlands provide with water quality and quantity treatment.
- ☐ Created wetlands not used to treat stormwater runoff.
- ☐ In compliance with Biological Assessment (BA), or Environmental Assessment (E.A.) for this project.

7. Downstream Analysis

- ☐ Downstream Analysis is provided in the report.

8. Sensitive Areas and Basin Plans

- ☐ Sensitive Areas and Basin Plan references have been included in the report.
- ☐ B.A. or E.A. have been completed.
- ☐ Special Basin Plan/Sensitive Area criteria used for the design.

9. Stormwater Site Plan

- ☐ TESC Plans Sheets included
- ☐ Narrative for temporary BMPs and Site Conditions included in report for erosion and sediment control.
- ☐ Applicable GSP, and special provisions included in an appendix to this report.

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H APPENDIX H -- BORING LOGS (only if applicable)

D

I APPENDIX I -- TRAFFIC DATA (only if applicable)

J APPENDIX J -- SECTION 303(d) LISTING

Example text for Section 4.1.6

Final 1998 Section 303(d) Listing of Impaired Waterbodies
Washington State
Washington State Section 305(b) Report August 2000 Appendix

WRIA	Waterbody Name	Parameter	T	R	Section	Latitude	Longitude	New ID	#Old ID#
1	Bertrand Creek	Dissolved Oxygen	40N	02E	12			CT89KD	WA-01-1110
1	Double Ditch Drain	Fecal Coliform	40N	03E	06			RC87WC	WA-01-1116
1	Whatcom Creek	Temperature	38N	03E	30			EZ19GC	WA-01-3110
1	Whatcom Creek	Temperature	38N	03E	30			EZ19GC	WA-01-3110

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Needed to be completed before turn-in a Stormwater Report

Effects Determination Letter -- From Regional Biology

Complete Biological Assessment Check List and obtain Endangered Species Listing
(Coordinate through NW Region Permits Office)

Right of Way

Plans

Alignments

Vertical Profile and Superelevations

Channelization

Traffic Study (when a safety rest area is involved)

ABBREVIATIONS COMMONLY USED IN STORMWATER REPORTS

ADT – Average Daily Traffic
BMP – Best Management Practice
components of a highway project. (May be contained within a Stormwater Report).
CSESC – Construction Site Erosion and Sediment Control Certification Course
DOE – Washington State Department of Ecology
DPS – Distinct Population Segments
ESC Lead – Erosion and Sediment Control Lead

ESU – Evolutionary Significant Units USFWS – United States Fish and Wildlife Service
GSP – General Special Provision
HM – Hydraulic Manual (M 23-03)
HPA – Hydraulic Project Approval
HRM – Highway Runoff Manual (M 31-16)
Hydraulic Report – A report containing the information and calculations required to obtain WSDOT Departmental Approval of the drainage components of a highway project. (May be contained within a Stormwater Report).
L.I.D. – Low Impact Development
MRI – Mean Recurrence Interval
NOAA Fisheries – National Oceanographic and Atmospheric Administration Marine Fisheries Service
NPDES – National Pollution Discharge Permit (Phase I or II)
P.S. & E. – Plans Specifications and Estimates
pH – potential of Hydrogen, degree of acidity or alkalinity
SPCC – Spill Prevention Control and Countermeasures Plan
SR – State Route
SSP – Stormwater Site Plan (May be contained within a Stormwater Report)
Stormwater Report – A report written as combination of a WSDOT Hydraulic Report and Temporary Erosion Control Plan (TESC) or Stormwater Site Plan (SSP)
Stormwater Report – A report written as combination of a WSDOT Hydraulic Report and Temporary Erosion and Sediment Control Plan (TESC) or Stormwater Site Plan (SSP)
TESC – Temporary Erosion and Sediment Control Plan (may be contained within a Stormwater Report.)

USFWS – United States Fish and Wildlife Service
WAC – Washington Administrative Code
WDFW – Washington Department of Fish and Wildlife
WRIA – Water Resource Inventory Area
WSDOT – Washington State Department of Transportation

Six Year Fish Passage listing:

<http://www.wsdot.wa.gov/environment/eao/fishpass/docs/2003Report.pdf#page=75>